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**APPENDIX A:
PUBLIC INVOLVEMENT**

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In preparing this EA, LM initiated public scoping on November 17, 2022. The public scoping period ended December 16, 2022. During the public scoping period, LM sent 30 scoping letters to Federal agencies, state and local governmental entities, American Indian tribes, and members of the public known to be interested in or affected by implementation of the alternatives evaluated in this EA. Table E-1 lists the organizations and individuals to whom LM sent scoping letters.

Public scoping was conducted for this project due to the scale of the project and due to the presence of an Environmental Justice population within the project's region of influence. The scoping process was conducted to solicit agency and community input on the scope and environmental issues to be addressed on a range of possible alternatives regarding the future of the 11-acre evaporation pond including sediment, liner, underlying soil, and associated infrastructure.

The majority of public scoping comments voiced the desire that LM not stop groundwater pumping and were against replacing the evaporation pond.

Table A-1. Shiprock environmental assessment scoping mailing list

Recipient	Contact
Navajo Nation – AML/UMTRA	Karen L. Bedonie, Department Manager
Navajo Nation – AML/UMTRA	Melvin Yazzie, Principal Mining Engineer
Navajo Nation – Council Delegate, Northern Agency	Honorable Eugenia Charles-Newton, Council Delegate
Navajo Nation – Department of Natural Resources	Bidtah Becker, Executive Director
Navajo Nation – Dine' Uranium Remediation Advisory Committee (DURAC)	Nona Bashone, Executive Director
Navajo Nation-Environmental Protection Agency (EPA)	Valinda Shirley, Executive Director
Navajo Nation-Environmental Protection Agency (EPA)	Steve Austin, Senior Hydrologist
Navajo Nation-Environmental Protection Agency (EPA)	Vivian Craig, Environmental Specialist
Navajo Nation – Land Department	W. Mike Halona, Department Manager
Navajo Nation – Police Department (Shiprock Police District)	Rory Atcitty, Police Lieutenant
Navajo Nation-Police Department (Shiprock Police District)	Sgt. Lee, Police Sergeant
Navajo Nation Police Department	Chrissy Largo, Senior Public Information Officer
Navajo Nation – Shiprock Chapter	Nevina D. Kinlahcheeny, Chapter President
Navajo Nation – Shiprock Chapter	Debra A. Yazzie, Chapter Vice President
Navajo Nation-Shiprock Chapter	Michele Peterson, Chapter House Coordinator
Navajo Nation – Shiprock District 12 Grazing Committee	Sarah A. Denetclaw-Begay, Shiprock Grazing Official
U.S. Nuclear Regulatory Commission (NRC)	Brittany Bolz, Senior Project Manager
U.S. Nuclear Regulatory Commission (NRC)	Sandra Talley, Senior Liaison Manager
San Juan County – Communications Authority	Crystal Carellano
Navajo Nation – Engineering & Construction Authority	Jermaine Paul, Equipment Manager
Navajo Nation – Engineering & Construction Authority	Terry Gorsuch

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Recipient	Contact
Navajo Nation-Shiprock Farm Board	Beatrice Redfeather-Benally, Farm Board Official
Agency for Toxic Substances and Disease Registry (ASTDR)	Jamie Rayman, Health Educator and Community Involvement Specialist
Northern Navajo Medical Center, Indian Health Services	Denise Bartley
Bureau of Indian Affairs-Navajo Region	George Padilla, Regional Environmental Scientist
Indian Country Grassroots Support	Josie Foo, Executive Director & Co Founder
Southwest Research and Information Center	
Forgotten People CDC	
Dine' C.A.R.E. (Citizens Against Ruining our Environment)	
Haul No!	

Place Holder for Public Comments

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**APPENDIX B:
NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION LETTER
TO THE NAVAJO NATION HISTORIC PRESERVATION OFFICER**

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Department of Energy
Washington, DC 20585

Mr. Richard Begay
Historic Preservation Officer
The Navajo Nation, Historic Preservation Department
PO Box 4950
Window Rock, AZ 86515

Subject: Consultation Regarding Proposed Removal of Existing Evaporation Pond at the
Shiprock, New Mexico, Disposal Site

Dear Mr. Begay:

The U.S. Department of Energy Office of Legacy Management (LM) is the long-term custodian of the Shiprock, New Mexico, Disposal Site and is responsible for long-term treatment of contaminated groundwater and protecting human health and the environment. The current groundwater compliance strategy at the Shiprock site consists of active remediation, combined with natural flushing, to achieve groundwater cleanup standards. The active remediation consists of groundwater extraction and evaporation of contaminated water in an 11-acre evaporation pond. Inspection and repairs of the evaporation pond liner in the summer of 2021 revealed the liner has reached the end of its useful life. Liner material testing and repair work has demonstrated the liner material has degraded and is now beyond repair; therefore, a decision needs to be made by LM about the future of the pond.

LM is preparing an Environmental Assessment (EA) for this decision in accordance with the National Environmental Policy Act of 1969, at Title 42 *United States Code* Section 4321 et seq. (42 USC 4321 et seq.), the Council on Environmental Quality's "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" at Title 40 *Code of Federal Regulations* Sections 1500–1508 (40 CFR 1500–1508), the requirements of DOE Policy 451.1, *National Environmental Policy Act Compliance Program*, and the "National Environmental Policy Act Implementing Procedures" at 10 CFR 1021. In this EA, LM is evaluating the environmental consequences associated with the full decommissioning of the existing evaporation pond. This would include complete removal of the pond sediments, liner, and underlying subliner material, which would be transported off tribal lands for disposal. The entire process is expected to take 2 to 5 years to complete.

In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) and its operating regulations in 36 CFR 800, it is LM's determination that the proposed removal of the existing evaporation pond comprises an undertaking in accordance with regulations found at 36 CFR 800.16(y). The work proposed is a type of activity that has the potential to have an adverse effect on historic properties should they be present; therefore, LM is initiating the NHPA Section 106 consultation process with your office. The area of potential effect (APE) for the proposed undertaking is depicted on the enclosed figure.

Previous work with your office has allowed LM to develop a comprehensive understanding of the existing cultural resources, mostly archaeological sites, found in the area surrounding the APE. Dinetahdoo Cultural Resources Management LLC summarized these resources in their report *An Expanded Literature Search of Cultural Resources and Site Reassessment of 903 Acres in Shiprock, San Juan County, New Mexico* (DRCM 2018-34); a copy of this report was provided to you by Dinetahdoo in late 2018. This report and its associated map documented the presence of six archeological sites that merit consideration as historic properties and one Traditional Cultural Property in the project area. However, all the properties are outside of the APE that LM has identified for ground-disturbing activity; thus, the proposed work will avoid all these previously identified cultural resources.

Please note that LM is not proposing to conduct any ground-disturbing activity outside of the APE indicated on the map. Should such activity be required outside of the APE in the future, additional consultation with your office would first be completed.

In accordance with 36 CFR 800.4(d)(1), LM has determined that there are no historic properties subject to effect by the proposed undertaking because none are present within the APE at the Shiprock disposal site. Should unidentified archaeological resources be discovered during site work, we would stop work until the resources have been evaluated in accordance with the National Register of Historic Places eligibility criteria found at 36 CFR 60.4. Such an evaluation would be made in consultation with your office in accordance with 36 CFR 800.13. If the scope of the described routine work changes substantially, additional consultation with your office may be required.


Please contact me at (505) 592-2447 or Joni.Tallbull@lm.doe.gov if you have any questions. Please let us know if you lack copies of any of the archaeological reports referenced in this letter, and we will provide them to you. Please address correspondence to:

U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

Sincerely,

Joni R.
Tallbull

Joni Tallbull
Shiprock Site Manager

 Digitally signed by Joni R.
Tallbull
Date: 2023.03.13 16:17:19
-06'00'

Enclosures

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cc w/enclosure via email:
Padraic Benson, DOE-LM
Joyce Chavez, DOE-LM
Tracy Ribeiro, DOE-LM
Joni Tallbull, DOE-LM
Kate Whysner, DOE-LM
Jeff Carman, RSI
Jim Denier, RSI
Anthony Farinacci, RSI
John Gabriele, RSI
David Miller, RSI
Joe Trnka, RSI
DOE Read File
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**APPENDIX C:
NAVAJO NATION DEPARTMENT OF FISH AND WILDLIFE CONSULTATION**

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Carrizo Mountain Environmental & Herbarium
693 CR 233, Suite A, Durango, CO 81301
505.793.1140

May 10th, 2023
Navajo Nation Department of Fish and Wildlife
Natural Heritage Program
PO Box 1480
Window Rock, AZ 86515

Requestor Name: Carrizo Mountain Environmental & Herbarium, Inc.
Contact Person: Samantha Hunt
Mailing Address: 693 County Road 233, Ste. A
Durango, CO 81301
Phone: 513-562-7460
Email: carrizo.samh@gmail.com

SUBJECT: We, Carrizo Mountain Environmental & Herbarium, Inc., are requesting data on the occurrence/potential occurrence of species of concern in the project area of the following Shiprock Disposal Site on behalf of RSI EnTech, LLC. RSI EnTech is consulting on this project on behalf of the U.S. Department of Energy (DOE) Office of Legacy Management (LM).

RSI EnTech, LLC Shiprock Disposal Site

Section(s)	Township	Range	County
36	30 North	18 West	San Juan
1	29 North	18 West	San Juan

7.5 Minute Series USGS Quadrangle(s): Shiprock

Project Description:

LM proposes to remove an evaporation pond and associated infrastructure at the Shiprock, New Mexico, Disposal Site. The proponent also plans to install new perimeter fencing and three additional gates to the previously disturbed project site. The proposed project would be on Navajo lands subject to Bureau of Indian Affairs and Navajo Tribal oversight. The project area is located approximately one mile south of Shiprock, New Mexico. The project is east of U.S. Hwy 491 and is on Foxtail Trail.

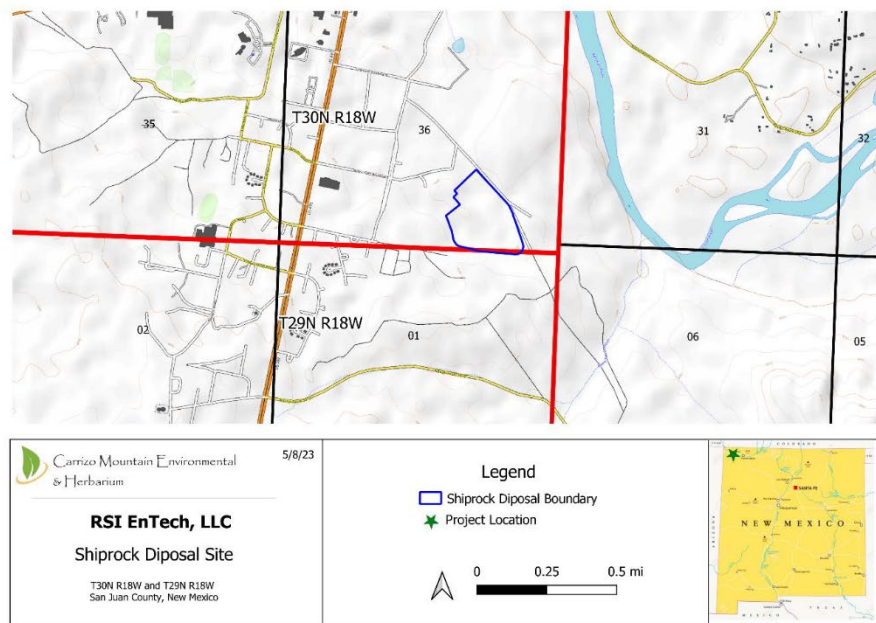
Attached find a topographical map of the proposed location. If you have questions or need additional information, please contact me at the below phone number.

Sincerely,

Samantha Hunt
Biologist
Carrizo Mountain Environmental & Herbarium, Inc.
513-562-7460

Environmental & Archaeological Consultants
New Mexico, Colorado, Arizona, Utah / 505.793.1140
Carrizo.office@gmail.com

Enclosure: Topographical Map of Project Area



Environmental & Archaeological Consultants
New Mexico, Colorado, Arizona, Utah / 505.793.1140
Carrizo.office@gmail.com

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**APPENDIX D:
HUMAN HEALTH RISK ASSESSMENT**

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1.0 Introduction

The human health risk assessment (HHRA) evaluates the potential adverse human health effects of exposures to hazardous chemicals and radionuclides from hypothetical implementation of the three remedial alternatives being evaluated for addressing leakage of the evaporation pond at the Shiprock Site. The objective of the HHRA is to support selection of a remedy that is health-protective of onsite and offsite maximally exposed individuals (MEIs). The three remedial alternatives include:

- Alternative 1 – No Action Alternative
- Alternative 2 – Full Decommissioning and Disposal of the Existing Evaporation Pond at Off-Site Licensed Waste Facilities via Highway Transport
- Alternative 3 – Full Decommissioning and Disposal of the Existing Evaporation Pond at Off-Site Licensed Waste Facilities via Highway/Rail Transport

Detailed descriptions of Alternatives 1, 2, and 3 are provided in the Environmental Assessment (EA) Sections 2.1, 2.2 and 2.3, respectively. To facilitate the analysis of each alternative, potential impacts are assessed for MEIs identified within the ROIs described in EA Section 3.11.1. MEIs include onsite workers, onsite remediation workers, site trespassers, and offsite residents. Offsite residents are hypothetically assumed to be resident farmers who grow fruits, vegetables and grains, as well as raise livestock. These impacts are calculated as potential excess lifetime cancer risks (ELCRs) and noncancer hazard indices (HIs) for chemicals identified as contaminants of potential concern (COPCs), and as potential ELCRs and radiological doses (i.e., in millirem [mrem] per year [mrem/yr]) for radionuclides identified as COPCs. Calculations and characterization of chemical and radiological ELCRs, radiological doses and noncancer HIs are the final step in the HHRA process, which is comprised of the steps described briefly.

- Data Evaluation – Identifies the appropriate HHRA analytical data sets for media of interest in the evaporation pond to be used for evaluations of the three remedial alternatives.
- Conceptual Exposure Model – Evaluates the physical, radiological and chemical characteristics of media of interest in the evaporation pond relative to the remedial alternatives being considered for decommissioning, as well as the ROI and MEIs. From this information, the site conceptual exposure model (CEM) establishes the information and assumptions from which the HHRA is developed and later refined relative to potential human exposures.
- Identification of Contaminants of Potential Concern – Selects medium-specific COPCs for evaluation of potentially complete MEI/exposure pathway combinations determined from the CEM. COPCs are determined from data comparisons with EPA generic and calculated risk-based screening levels. Radiological and/or chemical COPCs identified in this step are the focus of evaluations in the subsequent HHRA steps.
- Exposure Assessment – Quantifies concentrations of COPCs in environmental media to which onsite and offsite receptors are exposed and discusses assumptions regarding rates, frequencies and durations of intakes/exposures. This step also introduces computer and environmental fate and transport models used to estimate exposures.

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- Toxicity Assessment – Presents an assessment of the potential adverse effects of the exposures to COPCs and a compilation of the toxicity values used for developing numerical ELCR, dose and hazard estimates.
- Impacts Characterization – Integrates the results of the identification of COPCs, exposure assessment and toxicity assessment to calculate numerical estimates of potential ELCRs, radiological doses and hazards.
- Uncertainties – Presents sources of uncertainty associated with the data, methods, and exposure and toxicity values, etc., used in the HHRA and whether these sources result in an over- or under-estimation of actual impacts to MEIs.

2.0 Data Evaluation

Analytical data being used in this HHRA include sediment and surface water data collected from the evaporation pond. Although surface water and sediment data have been collected from seeps and washes (i.e., Bob Lee and Many Devils Washes) in the terrace and flood plain areas, the focus of the HHRA is the potential impacts from the pond under a no-action alternative and from the potential releases of contaminants that could occur during implementation of the two pond removal alternatives. Additionally, although groundwater can potentially be impacted by leaks in the HDPE liner in the evaporation pond, data from past groundwater sampling events from throughout the terrace and floodplain areas are not included in this HHRA. This HHRA focuses on the potential impacts to groundwater from the pond under the three remedial alternatives, both directly beneath the pond and at a downgradient, offsite receptor (MEI) location. No attempt is made to evaluate or characterize existing current or possible future groundwater conditions throughout the terrace and floodplain areas. Therefore, seep and groundwater data are not included in this HHRA.

Both radiological and non-radiological contaminants have been detected in sampled pond media (i.e., sediment and surface water) that could result in onsite and offsite exposures to MEIs. Concentrations of radionuclides, particularly in sediment, are the result of over 20 years of continuous pumping of groundwater containing naturally occurring levels of radionuclides into the evaporation pond, with subsequent sedimentary settling. Naturally Occurring Radioactive Material (NORM) is defined as “materials which may contain any of the primordial radionuclides or radioactive elements as they occur in nature, such as radium, uranium, thorium, potassium, and their radioactive decay products, such as radium and radon, that are undisturbed as a result of human activities.” The effects of continuous pond settling of NORM received from the groundwater treatment system has resulted in a concentration effect. This concentration of NORM in the pond sediment is called Technically Enhanced NORM. “Technologically enhanced” means that the radiological, physical, and chemical properties of the radioactive material have been concentrated or further altered by having been processed, or beneficiated, or disturbed in a way that increases the potential for human and environmental exposures; it’s associated with the Shiprock evaporation pond decommissioning have been evaluated in this EA to determine if it can present a hazard to human health and safety.

Furthermore, the Shiprock site, including the evaporation pond, falls under the regulatory authority of 40 CFR 192, *Health And Environmental Protection Standards For Uranium And Thorium Mill Tailings*, which applies to the control of residual radioactive material at designated processing or depository sites under section 108 of the Uranium Mill Tailings Radiation Control Act of 1978 and

to restoration of such sites following any use of subsurface minerals under section 104(h) of the Act, and under the regulatory authority of DOE O 451.1, *Radiation Protection of the Public and the Environment* which establishes requirements to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under the control of DOE pursuant to the Atomic Energy Act of 1954, as amended.

2.1 Pond Sediment Data

The sediment data are for samples collected systematically from throughout the pond area (i.e., based on a sampling grid) in November 2022. Validated sediment analytical data and the associated summary statistics are presented in Attachment D-1, Tables D-1-1 and D-1-2, respectively. A total of 11 samples were collected from sampling locations identified as locations 7000 through 7010. One field duplicate was collected from location 7006. All samples were analyzed for the radiological parameters, metals, general chemistry parameters, and hazardous waste characteristics. Radiological parameters include gross alpha, gross beta, uranium (U)-233/234, U-235/236, and U-238. Of these parameters, only the isotopic uranium data are usable in a risk assessment because activity fractions (used for converting to isotopic concentrations) and radiological toxicity factors (i.e., discussed in the Toxicity Assessment) are not available for quantifying risk and dose for gross alpha and beta activities. Metals parameters include arsenic, barium, cadmium, calcium, lead, magnesium, manganese, mercury, potassium, selenium, sodium, strontium, uranium, and zinc. General chemistry parameters include chloride, nitrate as nitrogen, nitrite, pH (not used in the HHRA), and sulfate. Hazardous waste characteristic parameters for which data are presented include the Toxicity Characteristic Leaching Procedure (TCLP) metals but are not used in the HHRA. Data for other hazardous waste characteristic parameters were also collected during the field investigation (e.g., flashpoint and reactive cyanide/sulfide), but are not presented as those results generally support waste disposal and are not used for HHRA.

Table D-1-2 shows that of the parameters presented in Table D-2-1, all were detected in at least one sediment sample, except for mercury, nitrite, TCLP arsenic, TCLP lead, and TCLP mercury, which were reported to be nondetects. Gross alpha/beta, U-233/234, U-238, barium, calcium, magnesium, manganese, potassium, selenium, sodium, strontium, uranium (U), and zinc, chloride, nitrate as nitrogen, sulfate, TCLP barium, and TCLP selenium were detected in all sediment samples collected from the evaporation pond. Other detected analytes include U-235/236, arsenic, cadmium, lead, TCLP cadmium, TCLP chromium, and TCLP silver.

2.2 Pond Surface Water Data

Surface water data for the evaporation pond that were considered for use in the HHRA are presented in Table D-1-3, with the associated summary statistics being presented in Table D-1-4. Surface water samples have been collected over multiple rounds for years. Because groundwater has been continuously pumped to the evaporation pond for years, the volume of water and concentrations present in the pond are subject to fluctuations with factors such as pumping rates and seasonal/climactic conditions. Therefore, to account for surface water concentration fluctuations in the HHRA data set, surface water data collected from two pond locations (i.e., locations 1215 and 1342), from March 2016 to September 2022, are included in the HHRA.

Table D-1-3 presents analytical data for 16 surface water samples collected from the two pond locations over a six-year period. Data for one field duplicate sample (collected in July 2018) are presented for location 1342. All samples were analyzed for the radiological parameters, metals, general chemistry/field parameters, and other parameters. Radiological parameters include thorium (Th)-228, Th-230, Th-232, U-233/234, U-235/236, and U-238. The comprehensive lists of metals and general chemistry/field parameters are presented in Table D-1-3. Other parameters include methanol, silica, silicon, and stable isotopic ratios of oxygen and sulfide in sulfate. Of the general chemistry/field parameters and other parameters, ammonia chloride, fluoride, nitrate plus nitrite nitrogen, sulfate, total residual chlorine, and silica are considered for the HHRA.

Table D-1-4 shows that of the isotopic thorium and uranium parameters, Th-228 and Th-230 were not detected in any surface water sample collected from the pond in 6 years. Other parameters not detected in any sample include aluminum, beryllium, chromium, lead, mercury, silver, and methanol. All three uranium isotopes, barium, boron, calcium, magnesium, nickel, potassium, selenium, sodium, strontium, thallium, uranium, zinc, ammonia, chloride, fluoride, sulfate, total residual chlorine, and silica were detected in all surface water samples collected from the evaporation pond. Other detected parameters include Th-232, arsenic, cadmium, copper, iron, and manganese.

A comparison of surface water versus sediment analytes shows that more parameters were analyzed in surface water than in sediment, most notably regarding radionuclides and metals. Detected surface water parameters that were not analyzed in sediment samples include Th-232, boron, copper, iron, nickel and nitrate plus nitrate nitrogen.

3.0 Conceptual Exposure Model

Decommissioning of the evaporation pond could result in potential exposures to onsite and offsite MEIs within the ROI. The types and magnitudes of exposures to affected MEIs associated with pond decommissioning are dependent upon the remedial alternative selected; therefore, a CEM has been developed for each remedial alternative (i.e., Alternative 1, and Alternatives 2 and 3). Each CEM describes the source(s) of contaminant exposures, mechanisms of the contaminant release from the source, environmental migration and transport pathways, affected onsite and offsite exposure media, potential MEIs, and human routes of chemical intakes and radiological exposures (i.e., ingestion, dermal contact, inhalation, and external radiation exposures).

The objective of the CEM is to identify those MEI/exposure pathway combinations that are potentially complete (meaning that exposures could occur), as well as those MEI/pathway combinations that are expected to be incomplete or insignificant. Complete exposure pathways are retained for further evaluations in the HHRA; whereas incomplete or insignificant pathways are eliminated from the HHRA. Depending on the remedial alternative, exposures are evaluated for MEIs assumed to be located onsite and offsite. For this evaluation, onsite MEIs are receptors located either at the evaporation pond or within the boundaries of the Shiprock site and can have direct contact exposures to COPCs identified in pond media (i.e., sediment and/or surface water). Offsite MEIs are located outside of the site boundaries and do not have direct contact exposures to media in the pond. Rather, offsite MEIs can become indirectly exposed to contaminants released from the pond via environmental transport mechanisms (e.g., air and groundwater transport).

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The MEIs evaluated in the HHRA are determined by onsite and offsite land uses, which are described in Section 3.7 of this EA report as being a mix of commercial/industrial, recreational and residential. Some residential land uses include agricultural uses. Based on these land uses, MEI scenarios considered applicable to this evaluation include onsite workers, site visitors, and offsite residents. Additionally, because of the active decommissioning alternatives being evaluated for the evaporation pond (i.e., Alternatives 2 and 3), pond remediation workers are also identified as MEIs. A brief description of each MEI is provided.

- Onsite worker – An individual whose job is the continued daily operation and maintenance of the groundwater remediation system and evaporation pond, as well as other site operations. Although health and safety requirements protect workers from exposures to contaminants in pond media, it is assumed that hypothetically, those requirements are not implemented, only for the purpose of conducting a health-conservative evaluation.
- Site Visitor – An individual who does not work at the site but occasionally accesses this site either with or without permission, i.e., as a working visitor or a trespasser, respectively. A working visitor is an individual who accesses the site in some capacity that supports the site operations. Typically, the working visitor accesses the site during standard site operating hours and complies with all rules and restrictions, which include those restrictions that preclude exposures to pond media. On the other hand, the trespasser is an individual who may access the site, typically outside of the site standard hours of operation. It is assumed that for the purpose of this evaluation that the trespasser is an adolescent or young adult. Because the trespasser does not comply with site restrictions, contact with contaminants in pond media is assumed to be not only possible, but much more likely than for a working visitor directly. Because of the potential to incur greater health risks, the site visitor in this HHRA is evaluated as a trespasser, and is hereafter, referred to a trespasser.
- Pond Remediation Worker – An individual who performs work that directly supports pond dewatering and sediment removal activities at the groundwater evaporation pond under Alternatives 2 and 3. Although health and safety requirements and PPE prevent exposures to contaminants in pond media, it is assumed that hypothetically, those requirements are not implemented for the purpose of conducting a health-conservative evaluation of this receptor.
- Offsite Resident – An individual hypothetically assumed to be a resident farmer, who grows fruits, vegetables and grains, as well as raises livestock. For this evaluation, offsite resident farmers are assumed to be located downwind or downgradient from the pond and can become indirectly exposed to contaminants released from pond media that have migrated via air or groundwater transport mechanisms, respectively. Multiple hypothetical offsite receptor locations are evaluated based on downwind and downgradient proximities to the evaporation pond.

For each remedial alternative, medium-specific migration pathways and human exposure routes applicable to each MEI are discussed hereafter. CEMs are also presented schematically for Alternative 1 in Appendix D, Figure D-1 and for Alternatives 2 and 3 in Figure D-2. Additionally, a CEM showing post-remedy (i.e., Alternatives 2 and 3) exposures to offsite resident farmers is presented in Figure D-3.

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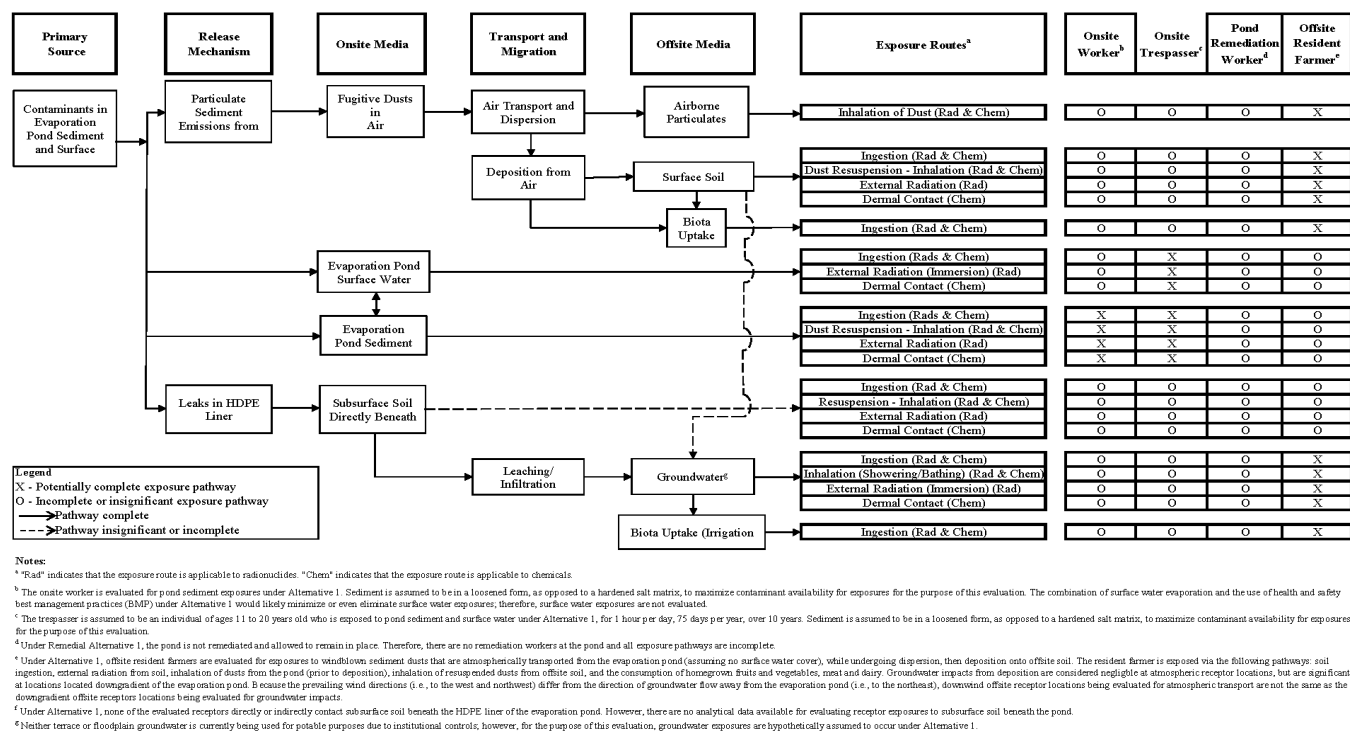


Figure D-1. Human health conceptual exposure model for onsite and offsite receptors, Alternative 1, Shiprock, New Mexico, disposal site

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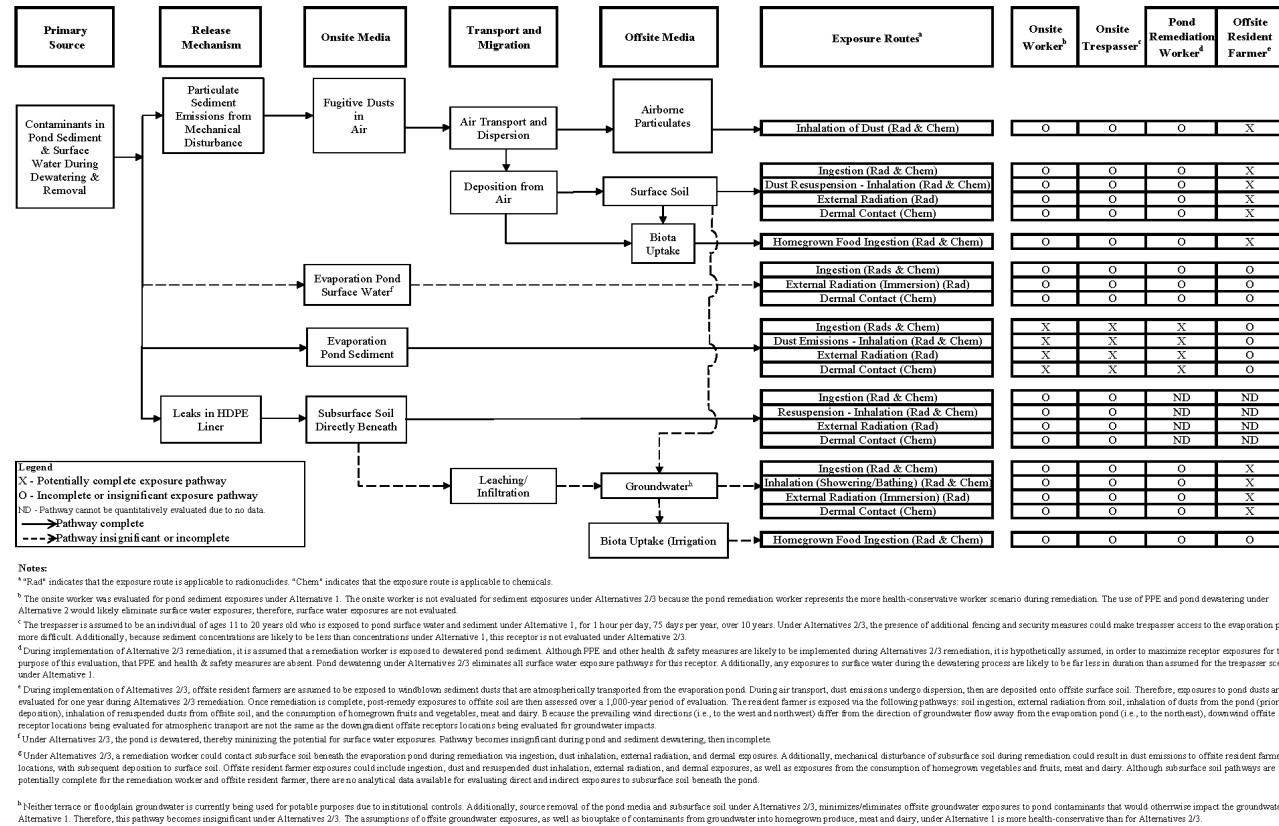
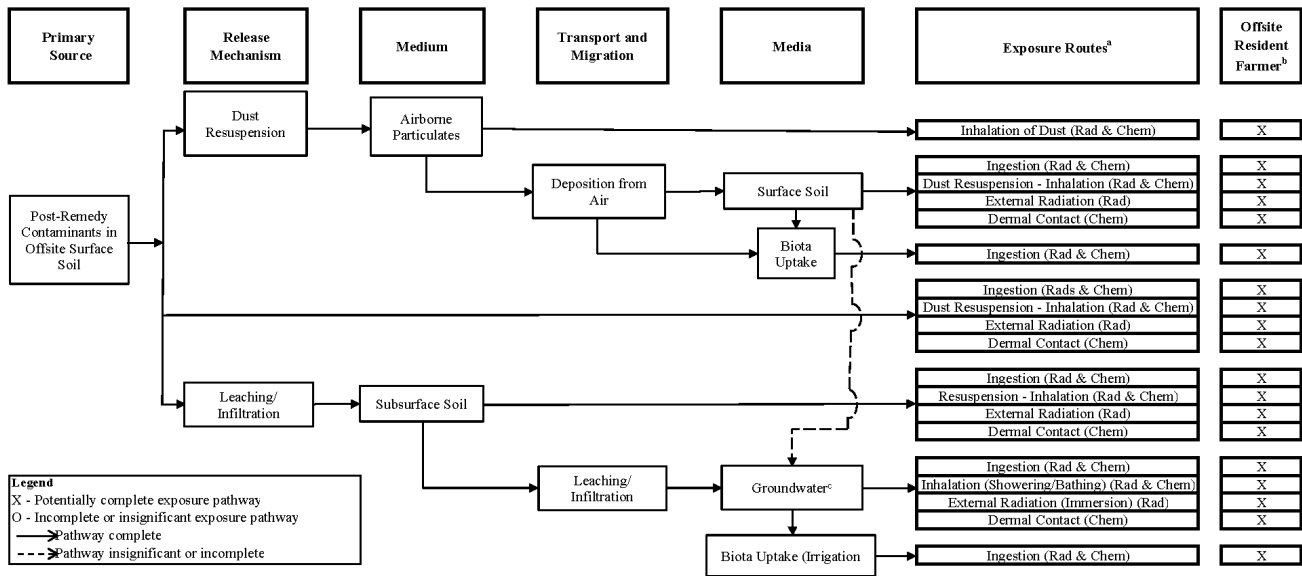


Figure D-2. Human health conceptual exposure model for onsite and offsite receptors during implementation of Alternatives 2/3, Shiprock, New Mexico, disposal site

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Notes:

* "Rad" indicates that the exposure route is applicable to radionuclides. "Chem" indicates that the exposure route is applicable to chemicals.

^b Once Alternatives 2/3 remediation is complete, post-remedy exposures to offsite soil are assessed over a 1,000-year period of evaluation. The resident farmer is exposed via the following pathways: soil ingestion, external radiation from soil, inhalation of resuspended dusts from offsite surface soil, and the consumption of homegrown fruits and vegetables, meat and dairy. Leaching of deposited contaminants in the offsite surface soil to subsurface soil and groundwater over time is likely.

⁶ Groundwater pathways in this CEM are considered only for the offsite locations that receive air deposition from the pond, and not the downgradient groundwater receptor location evaluated under Alternative 1. As a result of pond remediation, leaking and infiltration of pond contaminants into the groundwater are mitigated; therefore, groundwater transport from the pond to the downgradient groundwater receptor location (i.e., to the northeast of the former pond area), as well as associated exposure pathways, are eliminated.

Figure D-3. Human health conceptual exposure model for offsite receptors after completion of Alternatives 2/3, Shiprock, New Mexico, disposal site

3.1.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, the sediment, as well as the HDPE liner, are allowed to remain in the evaporation pond with no dewatering of surface water. Degradation of the liner is allowed to continue. According to Section 2.1, residual sediment would remain in the pond and continuous pumping of water would occur to ensure the sediment remains saturated for airborne particulate control. However, for the purpose of this analysis, it is hypothetically assumed that in the future, the groundwater pump and treat operations have ceased. This allows for the eventual drying of pond sediment, thereby increasing the availability of sediment for human exposures to facilitate a health-conservative evaluation of the sediment. Under this alternative, the availability of contaminants for human health and environmental exposures depends on the conditions of the sediment matrix and the progressively deteriorating HDPE liner. The current conditions of the pond media and liner (as of November 2022) are described hereafter.

Evaporation Pond Sediment

During the November 2022 sediment sampling event, the following observations were made regarding sediment conditions at the pond that could impact remedial alternatives evaluations, as well as the potential for human exposures (RSI EnTech, 2022):

- Loose sediments (muddy sediments/water) were encountered out to an average of 8 feet (ft) from the pond's dry edge when the team entered the pond.
- Beyond the 8-ft loose sediment layer, the bottom surface below the waterline became covered with a homogeneous rock-hard salt layer. The water covering the rock salt averaged about 6 inches.
- As the team attempted to penetrate this hard salt layer at the 11 sampling locations, steel-pointed shovels could not break through the rock salt. The team had to use a steel rock bar to break down through the rock salt to reach the surface of the HDPE liner. This salt breaking effort was performed carefully to prevent any damage to the liner itself. The rock salt was found to be in stratified layers.
- *It was noted that the rock salt layer extended all the way down to the surface of the HDPE liner in all 11 locations.* There was no instance observed where any underlying open space below the rock salt contained salt water (brine) instead of the solid rock salt all the way down to the liner surface during the sampling event.

Evaporation Pond Liner

The pond liner is a 45-millimeter (mil)-thick, scrim reinforced HDPE geomembrane/geosynthetic clay composite liner underlain by a compacted soil base. The liner has a 20-year warranty from the liner manufacturer and installer. The liner warranty period essentially coincides with the design life of the pond. According to the findings of a leak detection investigation of the liner (HGI, 2021), the pond liner is exhibiting increasing signs of deterioration, such as areas of wear and small holes that require repair. Defects in the liner can lead to environmental migration and subsequent receptor exposures to contaminants in the pond water and sediment.

Human Health Impacts Evaluation of Alternative 1

Considering the observed conditions of the sediment/salt matrix and the HDPE liner, the information and assumptions described below are applied for assessing human health impacts from implementation of remedial Alternative 1. MEI/exposure pathway combinations that are identified as complete are presented in Figure D-1.

- Under normal operating conditions both the loose and hardened sediment layers remain under water due to continuous operation of the groundwater pumping system. However, under this alternative, groundwater pumping operations have ceased, so it is assumed that surface water (as observed in November 2022) may only intermittently exist.
- The presence of surface water prevents wind erosion of loose sediment and there are no atmospheric releases of contaminated sediment dust particulates to offsite locations. However, when surface water is not present, the atmospheric transport pathway to downwind, offsite resident locations, followed by particulate deposition onto offsite soil and homegrown produce, is complete. Therefore, as a health-conservative evaluation, it is assumed that surface water is absent, allowing for windblown releases of pond sediment particulates into the air, which are dispersed during air transport and deposited at downwind offsite locations. Based on the CEM analysis, offsite resident farmer exposures are assumed to occur via offsite soil ingestion, dermal contact, external radiation, and inhalation of dust particulates following resuspension. Additionally, exposures to the resident farmer may occur via the consumption of homegrown fruits, vegetables and grains, as well as homegrown meat and dairy impacted by both atmospheric and groundwater transport pathways. Potential impacts to offsite groundwater at locations A through F under Alternative 1 are likely to be insignificant but are being assessed in the HHRA.
- Offsite resident farmer exposures to maximum concentrations estimated to be in the surface soil and other affected media are assessed 1,000 years into the future in accordance with DOE Order (DOE O) 458.1 (*Radiation Protection of the Public and the Environment*).
- Based on the prevailing wind directions shown in the wind rose developed using site-specific meteorological data shown in Figure D-4, six offsite receptor locations were selected for evaluation of impacts that could result from atmospheric transport. These locations (labeled A through F) are presented in Figure D-5. Because the prevailing wind directions (i.e., to the west and northwest) differ from the direction of groundwater flow away from the evaporation pond (i.e., to the northeast), downwind offsite receptor locations being evaluated for atmospheric transport are not the same as the three hydraulically downgradient offsite receptor locations shown in Figure D-5. Separate downwind and downgradient receptor locations are evaluated to maximize exposures that could result from atmospheric and groundwater pathways, respectively.
- Although sediment in the evaporation pond exists in the forms of loose sediment and a hardened salt crust or monolithic mass, sediment exposures to onsite receptors under Alternative 1 conservatively assume that all sediment is loose and therefore, more bioavailable for human exposures.
- Onsite workers at the Shiprock Site are typically not exposed via direct contact with contaminants in evaporation pond media due to established and required health and safety

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practices (i.e., best management practices [BMPs]), which include the use of personal protective equipment (PPE) as needed. Workers would be protected via implementation of DOE requirements (e.g., 10 CFR Part 835, “Occupational Radiation Protection,” and 10 CFR Part 851, “Worker Safety and Health Program and Administration Procedures.”). However, for the purpose of this evaluation, onsite workers are conservatively assumed to be exposed to loose/aggregated pond sediments that have become exposed following the loss (i.e., through evaporation) of surface water, though it is assumed that some surface water may still exist. The assumption of loose sediment results in an increased availability of sediment for human exposures as opposed to that of the hardened salt matrix. Complete onsite pond sediment exposure pathways include ingestion, dermal contact, external radiation, and inhalation of dust particulates. Surface water exposures are not assumed to be significant for the onsite worker to due to a combination of evaporation and the establishment of health and safety practices (i.e., BMPs).

- None of the onsite MEIs considered under Alternative 1 are assumed to have access and contact exposures with subsurface soil or groundwater directly beneath the evaporation pond and Shiprock Site.
- Land use controls are in place at the site consisting of fencing to prevent access by unauthorized persons. However, vandalism has occurred in the past, mainly consisting of fence material theft. Therefore, trespassing into the evaporation pond area cannot be ruled out.
- Under Alternative 1, the presence of surface water is assumed to be intermittent. Therefore, trespassers are assumed to be exposed to loose pond sediments that have become exposed following the loss (i.e., through evaporation) of surface water, though it is assumed that some surface water may still exist at all times under Alternative 1. The assumption of loose sediment results in an increased availability of sediment for human exposures as opposed to that of the hardened salt matrix. Complete onsite pond sediment exposure pathways include ingestion, dermal contact, external radiation, and inhalation of dust particulates.
- Unlike the onsite worker, surface water exposures are assumed to be more significant for a trespasser due to the unpermitted, random behaviors of the trespasser and noncompliance with site restrictions (i.e., fencing, signage, etc.). Health impacts to trespassers contacting surface water are assessed by assuming that trespassers waded into the surface water, resulting in potential water ingestion, dermal contact and external radiation (immersion) exposures. Inhalation of volatile chemicals in surface water is an incomplete pathway due to none being detected.
- Current land use restrictions prohibit residential redevelopment of the Shiprock Site; therefore, there are no current and hypothetical future onsite residents evaluated for exposures to pond media at the evaporation pond.
- Under Alternative 1, contaminants in pond media are allowed to leak through defects in the deteriorating HDPE/clay liner, while percolating downward through the subsurface soil, and into the east terrace alluvium and Mancos Shale groundwater.
- Currently, groundwater in both the floodplain and terrace is not currently used for any purpose and is not considered potable. Treated water for the Shiprock community is provided through an interconnection with the municipal supply of Farmington, New Mexico, and is sourced from the Animas River (DOE, 2022b). However, the evaluation

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of Alternative 1, assumes that groundwater impacted pond contaminant infiltration migrates offsite to three hypothetical downgradient resident farmer location locations (see Figure D-5), where it is hypothetically used for potable purposes to calculate human health impacts. The three locations are labeled as R0 (located at a downgradient edge of the evaporation pond), R1 (located at pumping well 1093R) and R2 (located at the San Juan River). Groundwater transport modeling is used to simulate migration of groundwater contaminants from the evaporation pond to a downgradient, offsite receptor well located in closest proximity to the pond. Groundwater exposures to residents are assumed to occur hypothetically via ingestion of drinking water, dermal contact and external radiation while bathing/showering, and subsequent consumption of homegrown produce, meat and dairy following irrigation and watering of livestock.

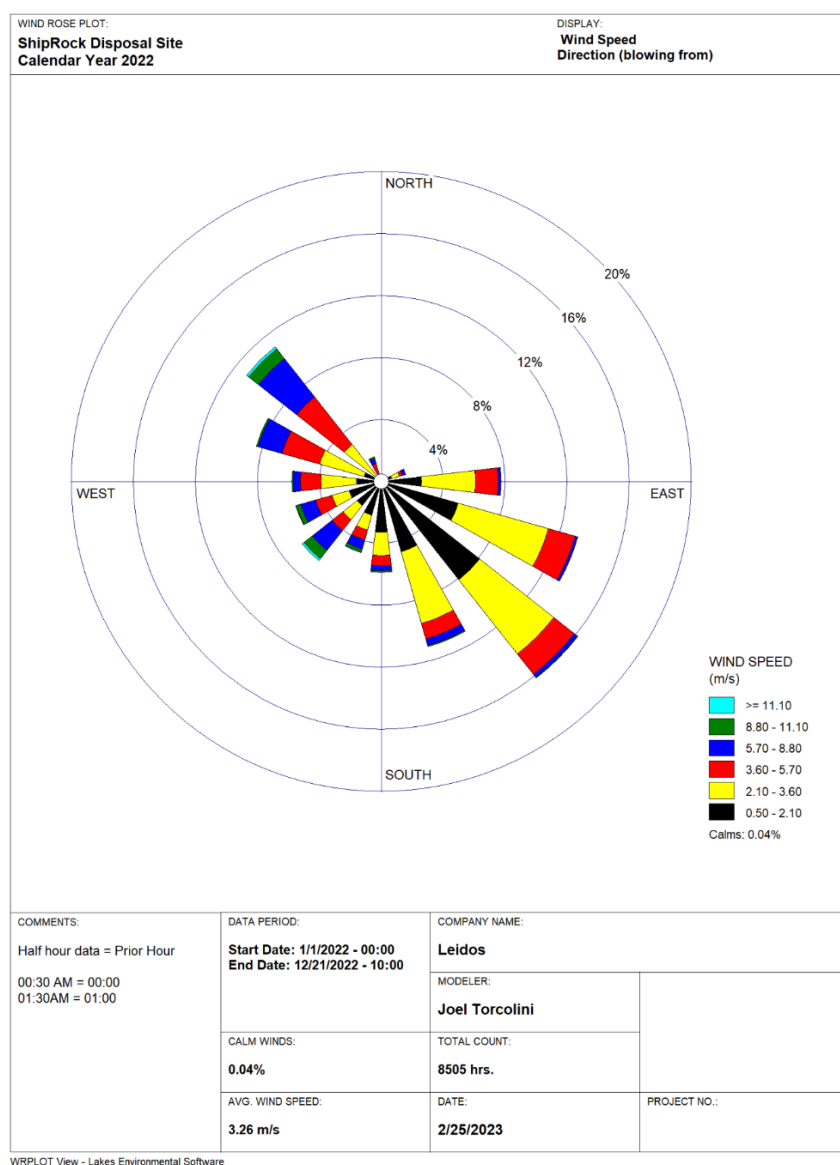


Figure D-4. Wind speed and direction distribution at the Shiprock disposal site



Figure D-5. Offsite receptor locations for air and groundwater transport modeling analyses

3.2 Alternative 2 – Full Decommissioning and Disposal of the Existing Evaporation Pond at Off-Site Licensed Waste Facilities via Highway Transport

This alternative involves mitigating the potential for human exposure to the sediment in the evaporation pond through excavation and off-site disposal. Pond dewatering will be performed in accordance with the following document: *Alternatives Assessment Dewatering of Sediments & Evaporation Pond, Shiprock, NM Disposal Site* (Geosyntec Consultants, 2022). Once dewatered, the sediment will be amended with clean fill (e.g., Portland cement) until it has a moisture content appropriate for excavation, packaging, transport, and off-site disposal. Removed sediment, along with the HDPE liner, is to be packaged then transported by highway to an offsite licensed waste facility. Once sediment and liner removal activities are complete, clean backfill would be brought to the site to backfill the excavation and would be graded to facilitate stormwater runoff, and to match existing grades.

Based on the above information, the information and assumptions below are applied for assessing human health impacts from implementation of remedial Alternative 2. MEI/exposure pathway combinations that are identified as complete are presented in Figure D-2.

- Soil removal and decontamination and decommissioning (D&D) are not expected to result in a discharge of contaminants to groundwater.
- Soil removal and D&D would incorporate procedures (e.g., BMPs) to protect against discharge of contaminants via surface runoff.
- Health impacts to onsite workers and pond remediation workers are expected to be insignificant because of required implementation of health and safety BMP among which

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are water-spraying to control dust emissions and the use of PPE. Workers would be protected via implementation of DOE requirements (e.g., 10 CFR Part 835, “Occupational Radiation Protection,” and 10 CFR Part 851, “Worker Safety and Health Program and Administration Procedures”). However, for the purpose of this evaluation, pond remediation workers are conservatively assumed to be exposed to (dry) pond sediments following dewatering and during excavation and removal actions. Exposures could occur via sediment ingestion, dermal contact, dust inhalation, and external radiation. No surface water exposures are likely to pond remediation workers assuming the pond is dewatered.

- Similar to pond remediation workers, and despite implementation of health and safety BMP, it is assumed that onsite workers can also be exposed to dry sediments via ingestion, dermal contact, dust inhalation, and external radiation. However, during decommissioning under Alternative 2, which is anticipated to last approximately one year, sediment exposures to pond remediation workers are expected to be more contact-intensive than sediment exposures to onsite workers, thereby resulting in higher health risks for the remediation worker versus the onsite worker. Therefore, during the HHRA, only the pond remediation worker exposures are quantitatively evaluated.
- Following pond dewatering and the start of excavation/removal of the sediment and liner, it is assumed that site trespassers could access the pond during off-hours, when no decommissioning work is being done. Under this scenario, exposures to sediment and broken rock salt could occur via ingestion, dermal contact, dust inhalation, and external radiation. However, because sediment concentrations under Alternative 2 are assumed to be slightly less (due to addition of amendment) than those being assessed under Alternative 1, this scenario is not being quantitatively assessed for Alternative 2.
- Pond sediment excavation and dumping activities could result in emissions of dust particulates from the pond into the air, with subsequent transport, dispersion, and deposition onto offsite surface soil throughout the one-year period during which Alternative 2 is being implemented. Potentially affected offsite members of the public include a resident farmer who could become exposed occur via the following pathways: offsite soil ingestion, external radiation from offsite soil, inhalation of dusts from the pond that are suspended in the air (prior to deposition), inhalation of resuspended dusts from offsite soil, and the consumption of homegrown fruits and vegetables, meat and dairy impacted by deposition. Resident farmers at offsite locations A through F (see Figure D-5) are evaluated for exposures via these pathways during Alternative 2 decommissioning. Potential impacts to offsite groundwater at locations A through F during Alternative 2 decommissioning are likely to be insignificant but are being assessed in the HHRA.
- Primary source media removal from the evaporation pond (i.e., surface water, sediment and salt matrix), along with the deteriorating liner would mitigate contaminant migration to the subsurface soil and subsequently, groundwater. It is assumed that all subsurface soil contamination is removed under Alternative 2 and that there are no impacts to human health from subsurface soil.
- Downgradient, offsite concentrations of pond contaminants determined during the groundwater modeling calculations for remedial Alternative 1 are representative of the worst-case scenario for hypothetical potable use by offsite residents. Under Alternative 2,

the primary pond contaminant source media are removed; therefore, calculations of health impacts associated with offsite groundwater migration pathways are not necessary.

- After removal, the sediment/liner wastes are loaded into supersacks inside of a proposed temporary waste packaging building where it is staged until offsite transport and disposal. The building and supersack packaging prevent dust emissions to outside air. Because of health and safety practices by workers and no release of dust emissions to the building exterior, no quantitative assessment of human health impacts is necessary for workers, site visitors or offsite residents during this stage of Alternative 2.
- For offsite transport, the packaged material is loaded into tarped dump trucks that would prevent dust emissions during offsite transport and would provide containment of leaked contents in the event of potential rupturing of a supersack(s).
- Human health impacts from inadvertent releases during transport to offsite licensed disposal sites (for example, traffic accidents) are assessed as part of the Transportation analyses.

3.3 Alternative 3 – Full Decommissioning and Disposal of the Existing Evaporation Pond at Off-Site Licensed Waste Facilities via Highway/Rail Transport

Under Alternative 3, the evaporation pond would be fully decommissioned according to the process described for Alternative 2. However, as described in greater detail in EA Section 2.3, DOE-LM would transport waste to the offsite licensed disposal sites using a combination of haul trucks and rail. Once sediment and liner removal activities are complete, clean backfill would be brought to the site to backfill the excavation and would be graded to facilitate stormwater runoff, and to match existing grades.

All information and assumptions presented for assessing potential human health impacts during implementation of Alternative 2 apply to Alternative 3, except that the method of waste transport to an offsite disposal facility under Alternative 3 involves the transloading of supersacks from dump trucks into lined train gondolas, as described in Section 2.3. With this being the only difference between Alternatives 2 and 3, subsequent evaluations in this HHRA common to both alternatives hereafter will be referred to “Alternatives 2/3.” Potential releases during transloading are assessed as part of the Transportation analyses.

3.4 Post-Remedy (Alternatives 2/3) – Full Decommissioning and Disposal of the Existing Evaporation Pond at Off-Site Licensed Waste Facilities via Highway and/or Rail Transport

Following completion of Alternatives 2/3 decommissioning, pond dust contaminants that deposited onto offsite surface soil at locations A through F during decommissioning are assumed to remain in the offsite environment indefinitely, while undergoing fate and transport processes. The information and assumptions below are applied for assessing human health impacts to be estimated from post-remedy concentrations remaining in offsite soil. The CEM for the post-remedy exposures to an offsite resident farmer is presented in Figure D-3.

- Based on the CEM, a resident farmer could become exposed via the following pathways: offsite soil ingestion, external radiation from offsite soil, inhalation of dusts from the pond that are suspended in the air (prior to deposition), inhalation of resuspended dusts from offsite soil, and the consumption of homegrown fruits and vegetables, meat and dairy

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impacted by deposition. Resident farmers at offsite locations A through F (see Figure D-5) are evaluated for exposures via these pathways during Alternative 2 decommissioning. Potential impacts to offsite groundwater at locations A through F during Alternative 2 decommissioning are likely to be insignificant but are being assessed in the HHRA.

- Offsite resident farmer exposures to maximum concentrations estimated to be in the surface soil and other affected media are assessed 1,000 years into the future in accordance with DOR Order 458.1, *Radiation Protection of the Public and the Environment*.
- Once estimated, the post-remedy health impacts will be summed with those estimated for the 1-year period of decommissioning anticipated to occur under Alternatives 2/3 (see Alternative 2 discussion).

3.5 Summary of Complete Pathways and Receptor Scenarios

Table D-1 presents a summary of all onsite and offsite pathway or receptor combinations considered to be potentially complete under Alternatives 1 or Alternatives 2 and 3.

Table D-1. Summary of potentially complete pathway and receptor combinations

Exposure Media	Human Exposure Routes	Alternative 1				Alternatives 2/3			
		Onsite Worker	Onsite Trespasser	Pond Remediation Worker	Offsite Resident Farmer	Onsite Worker	Onsite Trespasser	Pond Remediation Worker	Offsite Resident Farmer ^a
Onsite Pathways/Exposure Media									
Pond Sediment	Ingestion	X	X			X ^b	X ^c	X	
	Dust Inhalation	X	X			X ^b	X ^c	X	
	External Radiation	X	X			X ^b	X ^c	X	
	Dermal Contact	X	X			X ^b	X ^c	X	
Pond Surface Water	Ingestion		X						
	External Radiation		X						
	Dermal Contact		X						
Offsite Pathways/Exposure Media									
Soil (via Air Deposition)	Ingestion				X				X
	Dust Inhalation				X				X
	External Radiation				X				X
	Dermal Contact				X				X
Groundwater (via Air Deposition to Soil then Infiltration)	Ingestion				X				X
	Inhalation (showering & bathing)				X				X
	External Radiation				X				X

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	Dermal Contact				X				X
Groundwater (via Onsite Releases to Subsurface from Leaking Liner, then Migration to Offsite)	Ingestion				X				
	Inhalation (showering & bathing)				X				
	External Radiation				X				
	Dermal Contact				X				
Homegrown Produce, Meat and Dairy (via Air Deposition to Soil & Crops)	Ingestion				X				X
Homegrown Produce, Meat and Dairy (via Onsite Releases to Subsurface from Leaking Liner, then Migration to Offsite)	Ingestion				X				

Key: X = Pathway/Receptor combination identified as being potentially complete

^a Includes continued impacts to offsite residents from soil deposition that remains after decommissioning of the evaporation pond has been completed. Offsite resident exposures to groundwater impacted by pond liner leakage is considered incomplete under Alternatives 2/3 following source removal.

^b Although pathways are potentially complete for an onsite worker, the pond remediation worker is being evaluated as the more conservative scenario under Alternatives 2/3.

^c Under Alternatives 2/3, the presence of additional fencing and security measures could make trespasser access to the evaporation pond more difficult. Additionally, because sediment concentrations are likely to be less than concentrations under Alternative 1, impacts to the trespasser are not quantitatively evaluated under Alternatives 2/3.

3.6 Environmental Fate and Transport Modeling

Based on the complete pathways and receptor scenarios identified in the CEM, environmental fate and transport modeling is necessary to determine offsite soil, air and groundwater concentrations to facilitate determination of offsite COPCs and calculations of impacts to the offsite MEI, i.e., the resident farmer, as ELCRs for radionuclides and carcinogenic chemicals, radiological doses, and HIs for noncarcinogenic chemicals. Under Alternative 1 and Alternatives 2/3, offsite soil and air are potentially impacted by dust emissions from the evaporation pond and subsequent deposition. Deposition can not only occur onto soil but onto crops in agricultural areas (fruits, vegetables and grains) consumed by humans and used as fodder for livestock. Contaminants present in offsite soil from deposition could also migrate to the subsurface, eventually infiltrating groundwater. For this HHRA, it is hypothetically assumed that offsite groundwater is used for potable and beneficial purposes, including providing irrigation for crop watering and water for livestock. In addition to atmospheric transport and deposition impacting groundwater at downwind, offsite locations under the Alternatives 1 and 2/3 scenarios, allowing the evaporation pond with deteriorating HDPE liner to remain in place under Alternative 1 could result in impacts to groundwater directly beneath the pond. Contaminated groundwater from beneath the pond would then migrate to offsite locations directly downgradient of the pond.

Detected contaminants in evaporation pond media include both radionuclides and chemicals. From the detected contaminants, a reduced list of COPCs will be identified in Section 4.0 for

onsite and offsite media that are to be later evaluated quantitatively for potential human health impacts in Section 7.0. Therefore, the next step of the CEM is to conduct computer fate and transport modeling analyses of the atmospheric transport pathways to determine offsite soil, air and groundwater COPCs, as well as modeling analyses of the subsurface groundwater transport pathways to determine offsite groundwater COPCs (directly downgradient of the pond). A variety of models are available for environmental fate and transport analyses, some of which are specific to radionuclides, while others are specific for chemicals. Because both radionuclides and chemicals are being evaluated in this HHRA, the same model(s) should be utilized for the evaluations of atmospheric transport of both radionuclides and chemicals, and the same model(s) should be utilized for the evaluations of subsurface groundwater migration of radionuclides and chemicals.

Therefore, to model atmospheric transport of contaminants from the onsite evaporation pond to downwind, offsite resident farmer locations under Alternatives 1 and 2/3, the most recent version of DOE's RESRAD-OFFSITE (Version 4.0) computer code is used. RESRAD-OFFSITE is a computer code developed to evaluate radionuclides and not chemicals. However, offsite air and surface soil concentration plot data calculated for radionuclides at offsite locations resulting from atmospheric transport can be used to determine the attenuation that occurs from dispersion and deposition, which can then be applied to the calculations of concentrations of chemical contaminants in offsite air and surface soil. In addition to RESRAD-OFFSITE, the latest version of DOE's RESRAD-ONSITE (Version 7.2) computer code is used to calculate onsite radiological exposures at the evaporation pond under Alternatives 1 and 2/3, as well as post-remedy (i.e., post-Alternatives 2/3) radiological exposures at the offsite locations long after completion decommissioning. Both the RESRAD-OFFSITE (Version 4.0) and RESRAD-ONSITE (Version 7.2) computer codes are discussed in Section 3.6.1.

For evaluation of contaminant migration in subsurface groundwater under Alternative 1, leachate concentrations of sediment contaminants, predicted to occur beneath the pond from leaks liner defects through the liner, were calculated using the U.S. Environmental Protection Agency's (EPA's) SESOIL model (Seasonal Compartment Model for Long-term Pollutant Fate and Transport in the Unsaturated Soil Zone). Leachate concentrations exceeding groundwater health-based screening levels and EPA's drinking water standards (i.e., maximum contaminant limits) are then modeled to simulate three-dimensional fate and transport during horizontal migration in groundwater to offsite locations. This modeling was performed using the AT123D (Analytical Transient 1-, 2-, and 3-Dimensional) model. These models are discussed in Section 3.6.2 and Attachment D-5.

3.6.1 RESRAD Models

The RESRAD-OFFSITE (Version 4.0) and RESRAD-ONSITE (Version 7.2) computer codes belong to a family of five RESRAD computer codes developed by DOE. The use of the RESRAD family of codes for modeling risk and dose has become an acceptable industry practice among prominent federal agencies.

Both the RESRAD-ONSITE and RESRAD-OFFSITE models can be used for evaluating impacts to an individual located on a site, within the boundary of primary contamination. However, only RESRAD-OFFSITE can be used to predict offsite media concentrations and impacts, located

outside of the boundary of primary contamination. For atmospheric modeling away from the primary contaminant source (i.e., the evaporation pond media under Alternatives 1 and 2/3), RESRAD-OFFSITE applies a Gaussian plume model based on an area source release to calculate air concentrations and soil deposition at an offsite location(s). For each of the six offsite resident farmer locations (labeled A through F in Figure D-5), the RESRAD-OFFSITE model performs these calculations relative to their positions in the plume as driven by location-specific meteorological conditions. To facilitate analysis of air transport and environmental migration of contaminants at a site based on local meteorological conditions, the RESRAD-OFFSITE model allows for user selection of location-specific meteorological data (i.e., by city) from a library built into the model, to approximate conditions at the site. For the Shiprock disposal site, meteorological data available in the model library for Farmington, New Mexico was selected. Compared to all cities available for selection in the model meteorological library, Farmington is the closest in proximity to the Shiprock disposal site, being located approximately 25 miles (straight-line distance) to the east southeast of the site, along the San Juan River.

In the RESRAD-OFFSITE model, each of the six offsite resident farmer locations are assumed to consist of a dwelling site, adjacent to which agricultural areas are assumed for growing fruits and vegetables, grains for livestock feed, and a pasture/silage growing area. Additionally, a drinking water well is located adjacent to the dwelling site. Generally, the calculations of cancer risk and dose in both the RESRAD-OFFSITE and RESRAD-ONSITE models is performed by activating any or all of nine exposure pathways and entering parameter input values commensurate with the receptor scenario(s) being evaluated. For the analysis of offsite resident farmer impacts from Alternatives 1 and 2/3, the following pathways are assessed: external radiation, inhalation, soil ingestion and the ingestion of plants, meat, and milk. For the onsite worker and pond remediation worker, the activated pathways used in the RESRAD-ONSITE model include external radiation, inhalation, and soil (for pond sediment) ingestion. Impacts to offsite surface water in the San Juan River due to atmospheric transport and deposition of contaminated pond sediment dusts are not considered to be significant because of prevailing wind directions away from the river and the distance of the river from evaporation pond.

Under Alternative 1, the RESRAD-OFFSITE computer code is used to model the accumulation of radionuclides in offsite soil due to air deposition from onsite sediment dust emissions from the evaporation pond, which is allowed to remain in place, over a 1000-year period of evaluation. Under Alternatives 2/3, RESRAD-OFFSITE is used to model the accumulation of radionuclides in offsite soil due to air deposition from onsite sediment dust emissions that occurs throughout the anticipated duration of pond decommissioning (approximately one year), after which deposition ceases. Under a post-remedy scenario, RESRAD-ONSITE is then used to model all pathways associated with resident farmer exposures to contaminants that remain in the offsite soil, over an evaluation period of 1,000 years, following the completion of decommissioning.

In addition to modeling the effects of contaminant concentration attenuations that occur during environmental transport and migration processes, both models incorporate radiological decay of parent isotopes and progeny ingrowth based on selection of the ICRP-107 radionuclide transformation database, along with selection of the appropriate model library of cancer slope factors (CSFs) and dose conversion factors (DCFs). The combination of CSFs and DCFs with other model inputs (e.g., source media concentrations, contaminant source inputs, receptor

location information, distances between source and receptor locations, environmental transport factors, receptor exposure routes and assumptions, model output reporting times, etc.), result in the calculations of receptor-specific ELCRs and doses, respectively. Depending on the cut-off half-life specified, the code automatically assembles the branching and decay chains of the initially present radionuclides in soil and calculates the effective DCFs for each principal nuclide in the decay chains, assuming secular equilibrium for short-lived associated progenies.

Both the RESRAD-OFFSITE and RESRAD-ONSITE models also allow for user selection of deterministic calculations and outputs versus probabilistic calculations and outputs. The former produces a single set of discrete ELCR and dose results reported for each user-specified timestep; whereas the latter produces statistical ranges of results at each timestep to address variations and uncertainties that typically exist in model inputs. For this HHRA, the deterministic analysis is performed for all runs using both models, because a probabilistic analysis requires a more extensive input of site-specific data and statistical data distributions.

3.6.1.1 Use of RESRAD-OFFSITE Radiological Outputs to Estimate Offsite Chemical Concentrations from Atmospheric Transport

As mentioned in Section 3.6, offsite air and surface soil concentration plot data calculated using RESRAD-OFFSITE for radionuclides in onsite dust emissions that are transported by air to offsite can be used to determine the attenuation that occurs from dispersion and deposition. The resulting attenuation factors can then be applied to the calculations of chemical concentrations in offsite air and surface soil that have also been transported, by air, from onsite dust emissions. Generally, assuming minimal radiological attenuations in the calculations (i.e., by use of the lowest attenuation factors) result in maximum offsite chemical concentrations, which consequently results in maximum estimations of offsite ELCRs and HIs. Conversely, assuming maximum radiological attenuations will minimize offsite chemical concentrations, ELCRs and HIs. Therefore, in this HHRA, attenuations for each offsite location are minimized to produce health-conservative estimates of maximized chemical concentrations, ELCRs and HIs for the resident farmer scenario.

Attachments D-3 and D-4 present the calculations of radiological attenuation factors under Alternatives 1 and 2/3, respectively, and their application in estimating chemical concentrations in offsite soil and air. The following steps describe the process used for the calculations of chemical concentrations in offsite soil.

Calculations of Chemical Concentrations in Offsite Soil

1. The attenuation factor between onsite pond concentrations of radionuclides and the location-specific offsite soil concentrations of radionuclides from air transport (with dispersion and deposition) are calculated by dividing the onsite pond sediment concentrations (pCi/g) for uranium-234, uranium-235 and uranium-238 by the maximum offsite soil concentrations (pCi/g) calculated for each offsite location. The maximum offsite soil concentrations are obtained from RESRAD-OFFSITE output plot data for each location. The pond sediment concentrations used to determine attenuation factors are upper-bound exposure point concentrations (EPCs) originally calculated to determine health impacts to onsite receptors. The EPC for each radionuclide represents the lesser of the ninety-five percent upper confidence limit of the arithmetic mean concentration (i.e.,

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UCL-95) versus the corresponding maximum detected concentration, as discussed in Section 5.2. When calculated, the attenuation factors for each isotope at the same location are approximately the same value. If slightly different, then the minimum attenuation factor is selected for each location from among the three isotopes. The calculations of attenuation factors for air transport under Alternatives 1 and 2/3 are presented in attachment Tables D-3-1 and D-4-1, respectively.

2. Once calculated, the minimum attenuation factors for each location/uranium isotope scenario are compiled and used for calculating the predicted chemical concentration (mg/kg) in soil at each offsite location. This is done by dividing the maximum detected pond sediment concentration for each chemical by the attenuation factor corresponding to the offsite location for which the offsite soil concentration (mg/kg) is being calculated. This calculation, as well as the resulting location-specific chemical concentrations in offsite soil, are presented for Alternatives 1 and 2/3 in attachment Tables D-3-2 and D-3-4, respectively.

Calculations of Chemical Concentrations in Offsite Air

1. The attenuation factor between air concentrations of radionuclides above the onsite pond and the concentrations of radionuclides in the air above the offsite locations from air transport (with dispersion and deposition) are calculated by dividing the maximum air concentrations above the pond (pCi/m³) for uranium-234, uranium-235 and uranium-238 by the corresponding maximum air concentrations (pCi/m³) above the offsite locations. Both the onsite and offsite maximum air concentrations used in the calculation are obtained from RESRAD-OFFSITE output plot data. The minimum attenuation factor is selected for each location from among the three isotopes. The calculations of attenuation factors for air transport under Alternatives 1 and 2/3 are presented in attachment Tables D-3-3 and D-4-3, respectively.
2. Next, the dust concentration in air above the pond (g/m³) is calculated by dividing the modeled maximum air concentration of each radionuclide (pCi/m³) (i.e., as obtained from the RESRAD-OFFSITE plot data) by the corresponding pond sediment EPCs (pCi/g). These calculations are also presented for Alternatives 1 and 2/3 in attachment Tables D-3-3 and D-4-3, respectively.
3. Finally, once calculated, the minimum attenuation factors for each location/uranium isotope scenario are compiled and used for calculating the predicted chemical concentration (mg/kg) in air above each offsite location. This is done by first calculating the maximum air concentration above the pond (μg/m³) by dividing the maximum detected pond sediment concentration for each chemical (mg/kg) by the dust concentration in air above the pond (g/m³) (determined in Step 2) and applying the appropriate unit conversions (i.e., $[1 \text{ kg soil}/1,000 \text{ g soil}] \times [1,000 \text{ } \mu\text{g chemical}/1 \text{ mg chemical}]$). Once the maximum air concentration of each chemical above the pond is calculated, it is divided by the attenuation factor corresponding to the offsite location for which the offsite air concentration (mg/kg) is being calculated. These calculations, as well as the resulting location-specific chemical concentrations in offsite air, are presented for Alternatives 1 and 2/3 in attachment Tables D-3-4 and D-4-4, respectively.

3.6.2 Groundwater Models

Discussions of the SESOIL and AT123D models used to determine groundwater migration COPCs for quantitative human health impacts evaluations, along with model inputs, outputs and results, are presented in Attachment D-5.

4.0 Identification of Contaminants of Potential Concern

In this HHRA, medium-specific COPCs are identified in both onsite and offsite environmental media that were described in the CEM. COPCs are radionuclides and/or chemicals detected in at least one sample collected for an environmental medium, for which the maximum detected concentration exceeds a generic or calculated screening level established for protection of a MEI that could be potentially exposed to that medium. Detected radionuclides and chemicals selected as COPCs are retained for quantitative analyses of health impacts (i.e., chemical and radiological ELCRs, radiological dose and noncarcinogenic HIs). Those radionuclides and chemicals not selected as COPCs for any media are eliminated from further analysis in the HHRA. Through data comparisons with radionuclide- and chemical-specific screening levels, COPCs are selected for both the onsite, primary source media in the pond, as well for secondary source media (i.e., onsite or offsite environmental media impacted by the primary source media via contaminant release and transport mechanisms, to which MEIs could also be exposed). According to the CEM, sediment and surface water are the primary source media for both onsite and offsite exposure pathways and environmental transport/migration pathways.

Onsite media impacted by sediment surface water under Alternatives 1 and 2/3 include air above the pond and groundwater directly beneath the pond. Once in the air and groundwater, these media become transport media by which COPCs can migrate to offsite downwind and downgradient locations, respectively. Pond sediment COPCs are released into the air via windblown erosion under Alternative 1 and by mechanical disturbances during decommissioning under Alternatives 2/3. Once in the air, transport to offsite locations, along with dispersion and deposition, result in contaminant impacts to offsite soil, homegrown produce, beef and dairy. Contaminant impacts to offsite groundwater via the air transport/deposition pathway could occur but is likely to be insignificant, per the CEM. Impacts to offsite groundwater are more likely to occur at locations directly downgradient of the evaporation pond via the subsurface migration of COPCs that infiltrate the water table due to leaks in the deteriorating liner, assuming the pond is allowed to remain in place under Alternative 1.

4.1 Screening Levels Used for Contaminant of Potential Concern (COPC) Selection

Based on the above information, screening levels have been both for the onsite and offsite environmental media listed below to facilitate evaluations of the receptor scenarios identified in the CEM.

Onsite Media

- pond sediment
- pond surface water
- groundwater (beneath the pond)

Offsite Media

- soil at atmospheric receptor locations
- air at atmospheric receptor locations
- groundwater at downgradient groundwater receptor locations

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The screening levels utilized are a combination of generic screening levels and calculated screening levels. Generic risk-based screening levels for radionuclides and chemicals are those that are readily available in tables that can be accessed through EPA's Regional Screening Levels (RSL) website (EPA, 2023a) for chemicals and EPA's Radiological Preliminary Remediation Goals (PRG) website (EPA, 2022a). Because generic screening levels tables do not include values for all media/receptor scenarios identified in the CEM, they are calculated online using the Oak Ridge National Laboratory's Risk Assessment Information System (RAIS) website (ORNL, 2023) and EPA's RSL website (EPA, 2023a).

All generic and calculated screening levels used to identify COPCs for media/receptor combinations are "risk-based" in that derivation of those derived based on protection of MEIs from carcinogenic and noncarcinogenic effects (also referred to as "cancer" and "noncancer" effects, respectively). Screening levels for radionuclides and carcinogenic chemicals are derived to be protective of potentially exposed MEIs from the morbidity effects of cancer (e.g., development of tumors), whereas screening levels for noncarcinogenic chemicals are derived to be protective of potentially exposed MEIs from adverse systemic health effects that may target specific organs or organ systems (e.g., cardiovascular toxicity from arsenic exposures, kidney toxicity from elemental uranium exposures, hair loss from exposures to selenium, dermatitis from exposures to arsenic or thallium, neurological toxicity from manganese exposures, etc.). If exposure to a chemical can result in both carcinogenic and noncarcinogenic effects, then the lower of the two values is selected as the screening level used for more health-conservative data comparisons.

In this HHRA, carcinogenic risk-based screening levels are derived to target an ELCR of $1\text{E-}06$ (i.e., representing the risk of occurrence of one additional incident of cancer in a lifetime over the baseline incidents of cancer in a population of one million people). However, an ELCR is not to be viewed as a predictor of whether cancer incidents will occur within an identified population of exposed individuals. Rather, it is a probability that provides a means for establishing target limits above which action is needed. The target ELCR for carcinogenic screening levels represents the lower, more health conservative end of EPA's target ELCR range of $1\text{E-}06$ (i.e., a one in one million probability) to $1\text{E-}04$ (i.e., a one in ten thousand probability). The noncarcinogenic screening levels used in this HHRA are protective of non-cancer effects to a MEI based on a target hazard quotient (HQ) of 0.1. Generally, an HQ is the ratio of a chemical intake level to an allowable intake limit (i.e., reference dose). Although an HQ of 1.0 is considered protective from adverse effects to a single chemical, a target HQ of 0.1 is a more protective level in that protection is provided from exposures to multiple chemicals that could impact similar target organs. Therefore, for this analysis, non-cancer screening levels targeting the HQ of 0.1 are applied for additional health conservatism.

In addition to risk-based screening levels, radiological dose-based screening levels can also be calculated through EPA's online Dose Compliance Concentration calculator. However, because risk-based screening levels are typically exceeded before the corresponding dose-based screening levels, radiological COPC selection is usually driven primarily by data comparisons with the risk-based screening levels. Therefore, although radiological doses are calculated and presented during Impacts Characterization (Section 7.0) of this HHRA, data comparisons with dose-based screening levels to select radiological COPCs is not performed.

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Based on the above screening level information, as well as on the CEM described in Section 3.0, the types of screening levels described in the bullets below are applied to determine onsite and offsite medium-/receptor-specific COPCs relative to evaluations of remedial Alternatives 1 and 2/3. Included in the bullets below are a brief description of receptor and exposure medium with the remedial alternative evaluation to which it applies (in parentheses), sources of the radiological and chemical screening levels (i.e., generic or calculated), reference citations for the generic values, reference citations for online calculators used, and the Appendix D attachment showing online calculator outputs for the calculated values.

- Onsite Worker Exposures to Pond Sediment (Alternative 1)
 - Radiological screening levels are EPA's generic PRGs for industrial soil (EPA, 2022a).
 - Chemical screening levels are EPA's generic RSLs for industrial soil (EPA, 2023a).
- Onsite Trespasser Exposures to Pond Sediment (Alternative 1)
 - Radiological screening levels are calculated using ORNL's online RAIS calculator for recreator soil exposures (ORNL, 2023); Output presented in Attachment D-2-1.
 - Chemical screening levels are calculated using ORNL's online RAIS calculator for recreator soil exposures (ORNL, 2023); Output presented in Attachment D-2-2.
- Pond Remediation Worker Exposures to Pond Sediment (Alternatives 2/3)
 - Radiological screening levels are calculated using ORNL's online RAIS calculator for construction worker soil exposures (ORNL, 2023); Output presented in Attachment D-2-3.
 - Chemical screening levels are calculated using ORNL's online RAIS calculator for construction worker soil exposures (ORNL 2023); Output presented in Attachment D-2-4.
- Onsite Trespasser Exposures to Pond Surface Water (Alternative 1)
 - Radiological screening levels are calculated using ORNL's online RAIS calculator for recreator surface water exposures (ORNL, 2023); Output presented in Attachment D-2-5.
 - Chemical screening levels are calculated using ORNL's online RAIS calculator for recreator surface water exposures (ORNL, 2023); Output presented in Attachment D-2-6.
- Offsite Resident Farmer Exposures to Offsite Soil from Deposition (Alternatives 1 and 2/3)
 - Radiological screening levels are not necessary because air transport of detected isotopes in pond sediment dust emissions are modeled to offsite locations (i.e., using RESRAD-OFFSITE Version 4.0, as discussed later) with the ELCRs from air deposition to offsite soil being calculated by RESRAD-OFFSITE.
 - Chemical screening levels are first calculated individually for the homegrown produce, beef and dairy pathways for resident farmer exposures using ORNL's online RAIS calculator (ORNL, 2023), with the output shown in Attachment D-2-7. The screening levels for these pathways are then combined with EPA's generic residential soil RSLs (EPA, 2023a) to calculate a total screening level for the offsite resident farmer that reflects all pathways contributions (see Attachment D-2-8).

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- Offsite Resident Farmer Exposures to Offsite Air During Decommissioning, Prior to Deposition (Alternatives 2/3)
 - Radiological screening levels are not necessary because air transport of detected isotopes in pond sediment dust emissions during decommissioning are modeled to offsite locations (i.e., using RESRAD-OFFSITE Version 4.0, as discussed later) with the ELCRs associated with inhalation exposures to the offsite air concentrations being calculated by RESRAD-OFFSITE.
 - Chemical screening levels are EPA's generic RSLs for resident air (EPA, 2023a).
- Residential Exposures to Onsite and Offsite Groundwater (Alternative 1 – to Guide Groundwater Modeling Efforts)
 - Radiological screening levels are EPA's generic residential tap water PRGs (EPA, 2020; EPA, 2022a).
 - Chemical screening levels are EPA's generic tap water RSLs (EPA, 2023a) and MCLs (EPA, 2020; EPA, 2023a).
- Soil to Groundwater Migration Applied to Onsite and Offsite Sediment and Soil, respectively (Alternatives 1 and 2/3)
 - Radiological screening levels are EPA's generic risk-based and MCL-based screening levels (EPA, 2022a).
 - Chemical screening levels are EPA's generic risk-based and MCL-based SSLs from EPA's RSL tables (EPA, 2023a).

4.2 Results of COPC Selection

Utilizing the applicable risk-based screening levels described above, in conjunction with the information and assumptions described in the CEM, chemical and radiological COPCs for receptor scenarios associated with pond decommissioning Alternatives 1 and 2/3, the screening level comparisons have been conducted and are presented in the Appendix D attachment tables listed below.

- Attachment D-6 – Screening Level Comparisons for Onsite Sediment and Surface Water
 - Table D-6-1 – Onsite sediment screening for all receptor scenarios under Alternatives 1 and 2/3
 - Table D-6-2 – Onsite surface water screening for the onsite trespasser scenario (i.e., the only onsite receptor assumed to be exposed to surface water)
- Attachment D-7 – Screening Level Comparisons for Offsite Soil and Air for the Resident Farmer Scenario from Atmospheric Transport and Deposition under Alternative 1
 - Table D-7-1 – Screening of calculated offsite air chemical concentrations
 - Table D-7-2 – Screening of calculated offsite surface soil chemical concentrations
 - Table D-7-3 – Screening of offsite surface soil radiological concentrations and calculated offsite surface soil chemical concentrations for groundwater protection
- Attachment D-8 – Screening Level Comparisons for Offsite Soil and Air for the Resident Farmer Scenario from Atmospheric Transport and Deposition under Alternatives 2/3
 - Table D-8-1 – Screening of calculated offsite air chemical concentrations during decommissioning
 - Table D-8-2 – Screening of calculated post-remedy offsite surface soil chemical concentrations

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- Table D-8-3 – Screening of post-remedy offsite surface soil radiological concentrations and offsite calculated surface soil chemical concentrations for groundwater protection
- Attachment D-9 – Screening Level Comparisons for Onsite and Offsite Groundwater Concentrations from Subsurface Migration of Contaminants under Alternative 1
 - Table D-9-1 – Screening of modeled groundwater concentrations directly beneath the evaporation pond and screening of modeled groundwater concentrations at three downgradient receptor locations

4.3 Summary of COPCs

The results of the COPC selections for quantitative impacts analyses of onsite media are presented in Table D-2. Based on the results of screening level comparisons with calculated offsite surface soil and air concentrations of chemicals, there are no chemical COPCs identified in offsite surface soil or air at any of the six resident farmer locations. Additionally, the offsite screening of radionuclides and chemicals in surface soil for groundwater protection yielded no soil-to-groundwater COPCs at any of the six locations.

For offsite analysis, the uranium isotopes are retained for analysis of air transport from pond sediment dust emissions to the six offsite receptor locations during Alternatives 1 and 2/3 using the RESRAD-OFFSITE model. Post-remedy offsite concentrations of the uranium isotopes are then evaluated at the six offsite resident farmer locations using the RESRAD-ONSITE model for a period of 1,000 years after the evaporation pond has been removed.

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Table D-2. Contaminants of potential concern (COPCs) selected for quantitative impacts analysis of onsite evaporation pond media and receptor scenarios

Alternative:	Alternative 1						Alternatives 2/3	
Onsite Exposure Medium – Primary Source:	Pond Sediment					Pond Surface Water	Pond Sediment	
Offsite Exposure Medium – Secondary Source:	NA			Air, Soil, Homegrown Produce/Meat/ Dairy	Groundwater, Homegrown Produce/Meat/ Dairy	NA	NA	Air, Soil, Homegrown Produce/Meat/ Dairy
Receptor Scenario:	Onsite Worker	Onsite Trespasser	Onsite Sediment to Groundwater Transport ^a	Downwind Offsite Resident Farmer at Six Locations ^b (via air transport)	Downgradient Offsite Resident Farmer at Three Locations ^c (via groundwater transport)	Onsite Trespasser	Pond Remediation Worker	Downwind Offsite Resident Farmer at 6 Locations ^b (via air transport)
COPCs								
Uranium-234 ^d	X		X	X		X	X	X
Uranium-235 ^e	X		X	X		X	X	X
Uranium-238	X		X	X		X	X	X
Arsenic			X	X		X		X
Barium			X					
Cadmium			X	X				X
Manganese			X	X		X	X	X
Nitrate as Nitrogen ^f			X		X			
Selenium			X	X		X		X
Strontium			X	X				X
Thallium						X		
Uranium	X	X	X	X		X	X	X
Fluoride						X		

Key: COPCs = contaminants of potential concern; NA = not applicable

^a Although according to the CEM, a resident farmer is not being evaluated onsite under an assumed future land redevelopment scenario, pond sediment concentrations were screened using EPA's soil to groundwater PRGs (risk-based and MCL-based) for radionuclides (EPA, 2022a) and EPA's risk-based SSLs for chemicals (risk-based and MCL-based) (EPA, 2023a) to determine if detected radionuclides and chemicals are to be evaluated as COPCs for analysis of subsurface groundwater transport to offsite locations under Alternative 1.

^b Although according to the CEM, a resident farmer is not being evaluated onsite under an assumed future land redevelopment scenario, pond sediment radionuclide and chemical concentrations were screened to determine if detected radionuclides and chemicals are to be evaluated as COPCs for analysis of air transport to offsite locations under Alternatives 1 and 2/3. Radionuclide concentrations were screened using EPA's generic radiological PRGs for the resident farmer scenario (EPA, 2022a). Chemical sediment concentrations were compared to screening levels for the resident farmer that were calculated in Tables D-2-7 and D-2-8 using the online calculator on ORNL's RAIS website (ORNL, 2023).

^c See Attachment D-5 for discussion and results of SESOIL and AT123D groundwater modeling from evaporation pond sediment to three resident farmer receptor locations.

^d Laboratory analysis was for uranium-233/-234. However, since uranium-234 screening values are applied, the COPC identified for this parameter is uranium-234.

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^e Laboratory analysis was for uranium-235/-236. However, since uranium-235 screening values are applied, the COPC identified for this parameter is uranium-235.

^f Laboratory results showed detections of chloride, nitrate as nitrogen and sulfate in pond sediment. EPA generic soil to groundwater screening levels (EPA, 2023a) are not available for any of these parameters for screening sediment concentrations for groundwater protection (and migration to offsite resident farmer locations). However, of these three parameters, only nitrate as nitrogen has a toxicity criterion (specifically, an oral reference dose) with which a risk-based tap water screening level has been calculated for possible further quantitative analysis in this HHRA. Additionally, an EPA MCL (10 mg/L) is also available for nitrate as nitrogen. A secondary MCL (250 mg/L) is available for chloride. Therefore, even though no EPA soil to groundwater screening levels are available for nitrate as nitrogen, and based on the groundwater modeling evaluation in Attachment D-5, only nitrate as nitrogen is identified as a groundwater protection COPC, under Alternative 1, for groundwater fate and transport modeling.

5.0 Exposure Assessment

An exposure assessment is used to evaluate potential exposures to site media by the human receptors identified for current and anticipated future land uses at the IAAAP sites.

Receptor/exposure pathway scenarios are refined based on the results of COPC identifications in Section 4.2, with those still being considered potentially complete being carried forward to quantitative risk analyses. For these receptor/pathway scenarios, EPCs are calculated and upper-bound numerical input values for exposure factors are identified for use in ELCR, HI and dose calculations that represent assumptions about receptor exposures.

5.1 Exposure Pathways Quantified in the Human Health Risk Assessment (HHRA)

During the CEM (Section 3.0), potential human receptors (MEIs) and exposure pathways were identified for further evaluation in the HHRA as presented in Figures D-1, D-2 and D-3, and summarized in Table D-1. An exposure pathway can be described as the physical course that a chemical or radionuclide takes from the point of release (or source) to a receptor. As demonstrated in the CEMs for the remedial alternatives being evaluated for the groundwater evaporation pond, a complete exposure pathway must have all the following components:

- A source (such as chemical residues in an environmental medium)
- A mechanism for chemical release and migration (such as groundwater infiltration)
- An environmental transport medium (such as groundwater)
- A point of potential human contact (exposure point, such as tap water)
- A route of human exposure, depending on chemical type (i.e., chemical versus radiological):
 - For chemicals, a route(s) of exposure resulting in internal intake/absorption (such as ingestion, dermal contact, or inhalation)
 - For radionuclides, an internal route resulting in exposure to ionizing radiation (such as ingestion or inhalation) and an external route resulting in exposure to ionizing radiation (such as external radiation from the ground or other surfaces, air submersion, or water immersion).

In the absence of any one of these components, an exposure pathway is considered incomplete, and, by definition, there is no risk or hazard. In Section 4.2, radiological and chemical COPCs were identified for combinations of exposure pathways, exposure media and receptors for quantitative risk analysis. Based on the combined results of the CEM evaluations that included land use considerations and identification of MEIs in Section 3.0, and the selection of COPCs in Section 4.0, the exposure pathways have been refined, as shown below by remedial alternative and receptor, and are further quantitatively evaluated in the HHRA.

Alternative 1

- Onsite Worker Exposures to Pond Sediment:
 - Ingestion of uranium isotopes and uranium
 - External radiation exposures to uranium isotopes
 - Dust inhalation exposures to uranium isotopes and uranium
 - Dermal contact with uranium
- Onsite Worker Exposures to Pond Surface Water:
 - Not evaluated due to health and safety BMPs and use of PPE

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- Onsite Trespasser Exposures to Pond Sediment (Uranium Isotopes Eliminated as COPCs):
 - Ingestion of uranium
 - Dust inhalation exposures to uranium
 - Dermal contact with uranium
- Onsite Trespasser Exposures to Pond Surface Water:
 - Ingestion of uranium isotopes, arsenic, manganese, selenium, thallium, uranium, and fluoride
 - External radiation exposures to uranium isotopes
 - Dermal contact with arsenic, manganese, selenium, thallium, uranium, and fluoride
- Offsite Resident Farmer Exposures to Groundwater from Pond Sediment Contaminant Releases through Deteriorating HDPE Liner:
 - Ingestion of nitrate (as nitrogen) in drinking water
 - Dermal contact with nitrate (as nitrogen) while showering/bathing
 - Ingestion of nitrate (as nitrogen) in homegrown produce (i.e., fruits, vegetables, grains) from irrigation
 - Ingestion of nitrate (as nitrogen) in beef from watered livestock and irrigated silage
 - Ingestion of nitrate (as nitrogen) in dairy from watered livestock and irrigated silage
- Offsite Resident Farmer Exposures to Pond Sediment Dust Emissions from Wind Erosion and Air Transport, Dispersion and Deposition:
 - Soil ingestion exposures to uranium isotopes
 - External radiation exposures to uranium isotopes
 - Dust inhalation exposures to uranium isotopes
 - Ingestion of uranium isotopes in homegrown produce (i.e., fruits, vegetables, grains)
 - Ingestion of uranium isotopes in beef
 - Ingestion of uranium isotopes in dairy
- Offsite Resident Farmer Exposures to Groundwater Impacted by Soil-to-Groundwater Migration Following Pond Sediment Dust Emissions from Wind Erosion and Air Transport, Dispersion and Deposition:
 - Not evaluated due to no offsite soil-to-groundwater COPCs

Alternatives 2/3

- Pond Remediation Worker Exposures to Sediment *During* Decommissioning:
 - Ingestion of uranium isotopes, uranium and manganese
 - External radiation exposures to uranium isotopes
 - Dust inhalation exposures to uranium isotopes, uranium and manganese
 - Dermal contact with uranium and manganese
- Pond Remediation Worker Exposures to Pond Surface Water *During* Decommissioning:
 - Not evaluated due to health and safety BMPs, use of PPE and pond dewatering
- Onsite Worker Exposures to Pond Sediment *During* Decommissioning:
 - Not evaluated due to pond remediation worker being the more exposure-intensive scenario
- Onsite Worker Exposures to Pond Surface Water *During* Decommissioning:
 - Not evaluated due to health and safety BMPs, use of PPE and pond dewatering

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- Onsite Trespasser Exposures to Pond Sediment During Decommissioning:
 - Not evaluated due to access restrictions implemented during decommissioning
- Onsite Trespasser Exposures to Pond Surface Water During Decommissioning:
 - Not evaluated due to access restrictions implemented during decommissioning and pond dewatering
- Offsite Resident Farmer Exposures to Pond Sediment Dust Emissions Generated During Decommissioning, Followed by Air Transport, Dispersion and Deposition:
 - Soil ingestion exposures to uranium isotopes
 - External radiation exposures to uranium isotopes
 - Dust inhalation exposures to uranium isotopes
 - Ingestion of uranium isotopes in homegrown produce (i.e., fruits, vegetables, grains)
 - Ingestion of uranium isotopes in beef
 - Ingestion of uranium isotopes in dairy
- Offsite Resident Farmer Post-Remedy Exposures (i.e., After Pond Sediment Dust Emissions Have Ceased):
 - Soil ingestion exposures to uranium isotopes
 - External radiation exposures to uranium isotopes
 - Dust inhalation exposures to uranium isotopes
 - Ingestion of uranium isotopes in homegrown produce (i.e., fruits, vegetables, grains)
 - Ingestion of uranium isotopes in beef
 - Ingestion of uranium isotopes in dairy
- Offsite Resident Farmer Post-Remedy Exposures to Groundwater Impacted by Soil to Groundwater Migration (i.e., After Pond Sediment Dust Emissions Have Ceased):
 - Not evaluated due to no soil-to-groundwater COPCs

5.2 Quantification of Exposure Point Concentrations

EPCs are calculated using methods consistent with the *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A)* (RAGS Part A) (EPA, 1989). An EPC is calculated for each COPC to provide an upper bound estimate of concentrations across media of interest in the ROI that are representative of potential receptor exposures. For onsite exposures under Alternative 1, EPCs are calculated for pond sediment and surface water separately using the data sets discussed previously in Section 2.0. The methods applied to calculating EPCs are also consistent with EPA approximation of the reasonably maximally exposed (RME) receptor scenario as established in EPA guidance documents *Supplemental Guidance to RAGS: Calculating the Concentration Term* (EPA, 1992) and *Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites* (EPA, 2002).

As part of the RME scenario, a medium-specific EPC for a COPC is calculated to be the lesser of the 95 percent upper confidence limit of the arithmetic mean concentration (UCL-95) or the maximum reported concentration. In this HHRA, the UCL-95 was calculated using the most recent version of EPA's ProUCL (Version 5.1.002), in accordance with EPA *ProUCL Version 5.1.002 User Guide, Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations* (i.e., "ProUCL User Guide") (EPA, 2015). The calculation of a UCL-95 for a COPC involves the entering of all detected and non-detect results into ProUCL as censored data by flagging each detected result with a "1" and each non-detect result with a "0," as described in the ProUCL User Guide. For statistical reliability, EPA recommends a dataset with

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a minimum of 8 to 10 samples to compute UCL-95 values. This is because a UCL-95 for a small dataset is mainly driven by the critical value, which becomes large and unstable when the dataset is comprised of fewer than 8 to 10 samples. Therefore, in this HHRA, the maximum concentration is selected by default as the EPC for a dataset with less than 8 to 10 samples. For duplicate sediment sample pairs (i.e., samples with field duplicates collected for the purposes of quality control) the results are reduced to a single set of results as follows:

- When both the parent and duplicate are detections, the higher result is used.
- When one result is reported to be a detection and the other result is a nondetect, the detected result is used.
- When both the parent and duplicate are nondetects, the result with the lower detection limit is used.

For duplicate surface water sample pairs, both the parent sample and duplicate sample results were incorporated into the calculations of UCL-95 values because of the non-static nature of surface water in the pond.

Table D-3 presents the selection process of sediment EPCs, along with the statistical distribution basis for each UCL-95, as well as the basis for each selected EPC value presented. ProUCL calculations to determine sediment UCL-95 values that are the basis for EPC determinations are presented in Attachment D-10, Tables D-10-1 through D-10-6.

Table D-3. Evaporation pond sediment exposure point concentrations (EPCs) summary

COPC	Units	Selection of EPCs for HHRA				
		Maximum Detected Conc.	UCL95 ^a	UCL Statistical Basis	EPC ^b	EPC Basis ^b
Uranium-234	pCi/g	19.2	14.85	95% Student's-t UCL	14.85	UCL95
Uranium-235	pCi/g	1.12	0.955	95% KM (t) UCL	0.955	UCL95
Uranium-238	pCi/g	17.1	13.08	95% Student's-t UCL	13.08	UCL95
Arsenic	mg/kg	0.688	---	---	0.688	Maximum
Barium	mg/kg	19.7	9.145	95% Adjusted Gamma UCL	9.145	UCL95
Cadmium	mg/kg	0.0633	---	---	0.0633	Maximum
Lead	mg/kg	1.03	0.63	95% KM Chebyshev UCL	0.63	UCL95
Magnesium	mg/kg	53,400	42,629	95% Student's-t UCL	42,629	UCL95
Manganese	mg/kg	288	162.6	95% Student's-t UCL	162.6	UCL95
Nitrate as Nitrogen	mg/kg	26,400	18,553	95% Student's-t UCL	18,553	UCL95
Selenium	mg/kg	34.7	29.19	95% Student's-t UCL	29.19	UCL95
Strontium	mg/kg	1,280	736.9	95% Student's-t UCL	736.9	UCL95
Uranium	mg/kg	50.6	38.96	95% Student's-t UCL	38.96	UCL95

Key: % = percent; COPC = contaminant of potential concern; EPC = exposure point concentration; mg/kg = milligrams to kilograms; pCi/g = picocuries per gram; UCL95 = 95 percent upper confidence limit of the arithmetic mean concentration

^a The EPC is calculated as the lesser of the UCL95 and the maximum detected result for data sets with a minimum of eight samples and at least four detections. Otherwise, the maximum is selected as the EPC.

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^b When the EPC basis is indicated as "Maximum" (i.e., for arsenic and cadmium), the maximum detected concentration was selected as the EPC because each dataset had only one detection out of twelve samples collected.

Note: "---" Indicates that the statistic is not calculated because dataset did not meet minimum detection requirements.

Similarly, Table D-4 presents the selection process of surface water EPCs, along with the statistical distribution basis for each UCL-95, as well as the basis for each selected EPC value presented. ProUCL calculations to determine sediment UCL-95 values that are the basis for EPC determinations are presented in Attachment D-10, Tables D-10-7 through D-10-12.

Table D-4. Evaporation pond surface water exposure point concentrations (EPCs) Summary

COPC	Units	Selection of EPCs for HHRA				
		Maximum Detected Conc.	UCL95	UCL Statistical Basis	EPC ^a	EPC Basis ^b
Uranium-234	pCi/L	2,460	---	Not calculated due to only 2 samples	2,460	Maximum
Uranium-235	pCi/L	163	---	Not calculated due to only 2 samples	163	Maximum
Uranium-238	pCi/L	2,200	---	Not calculated due to only 2 samples	2,200	Maximum
Arsenic	mg/L	0.25	0.191	95% KM (t) UCL	0.25	Maximum
Manganese	mg/L	8.5	3.418	95% KM Chebyshev UCL	3.418	UCL95
Selenium	mg/L	22	12.2	95% Adjusted Gamma UCL	12.2	UCL95
Strontium	mg/L	20.2	16.92	95% Student's-t UCL	16.92	UCL95
Thallium	mg/L	0.0382	0.0398	95% Student's-t UCL	0.0382	Maximum
Uranium	mg/L	31	15.88	95% Student's-t UCL	15.88	UCL95
Fluoride	mg/L	24.2	19.01	95% Student's-t UCL	24.2	Maximum

Key: % = percent; mg/L = milligrams per liter; pCi/g = picocuries per gram; UCL95 = 95 percent upper confidence limit of the arithmetic mean concentration

^a The EPC is calculated as the lesser of the UCL95 and the maximum detected result for data sets with a minimum of eight samples and at least four detections. Otherwise, the maximum is selected as the EPC.

^b When the EPC basis is indicated as "Maximum", the maximum detected concentration was selected as the EPC due to less than 8 samples in the COPC datasets.

Note: "---" Indicates that the statistic is not calculated because dataset did not meet minimum detection requirements.

The EPCs determined for pond sediment and surface water are applied to risk evaluations of onsite receptors under Alternative 1. Additionally, the pond sediment EPCs presented in Table D-3 for uranium isotopes are the source concentrations entered into the RESRAD-OFFSITE model to predict offsite air and soil concentrations resulting from atmospheric transport and deposition of sediment dust emissions due to wind erosion under Alternative 1 and mechanical disturbances during decommissioning activities under Alternatives 2/3 (see Attachments D-3 and D-4, respectively). The same pond sediment EPCs are also used as the source term in vertical sediment to groundwater migration modeling to determine leachate concentrations beneath the pond under Alternative 1 using the SESOIL model. The AT123D model is then used to simulate infiltration of the leachate into the groundwater beneath the pond, followed by horizontal groundwater migration to the offsite receptor locations where EPCs are predicted for resident

farmer exposures. The groundwater modeling and resulting concentrations at the offsite receptor locations are presented in Attachment D-5.

5.3 Radiological Exposure and Chemical Intake Calculations

In addition to calculating EPCs, input values for chemical intake and radiological exposure models were selected from current guidance. The equation input values represent assumptions about exposures to COPCs in environmental media via the applicable exposure pathways. These values are entered into equations and used to quantify exposure to contaminated media as chemical intakes or radiological exposures. Calculation of an intake or exposure is the intermediate step necessary to assess the magnitude of health impacts that could occur from assumed repeated exposures to concentrations (EPCs) of COPCs present in an environmental medium and the ELCRs, HIs or dose associated with those exposures. Simply stated, chemical intakes and radiological exposures provide a means to convert contaminant mass and activity concentrations, respectively, to health risks.

5.3.1 Radiological Exposures

Radiological exposures occur as the result of ionizing radiation penetrating and impacting tissues and organs on a cellular level. The quantification of internal and external radiological exposures to a radiological COPC is performed based on similar information regarding exposure setting and assumptions (i.e., equation input factors) that describe chemical exposures. However, calculations of radiological exposures must also incorporate the radioactive of decay chain of parent COPCs and the ingrowth of daughter isotopes.

The units used to express radiological exposures differ when an ECLR is being calculated versus those used to express a dose, as presented below.

- CDIs for ELCR Calculations:
 - Ingestion or inhalation CDI – picocuries (pCi)
 - External radiation exposures to soil/sediment as a volume source – pCi-year per gram (pCi-year/g)
 - External radiation exposures soil/sediment as an area source – pCi-yr per square centimeter (pCi-yr/cm²)
 - External radiation exposures to water are expressed as pCi-yr per liter of water (pCi-year/L)
 - External exposures to air (i.e., submersion), the units become pCi per cubic centimeter (pCi/cm³)
- CDIs for Dose (mrem/yr) Calculations:
 - Ingestion or inhalation internal CDI – pCi/yr
 - External radiation exposures to soil/sediment as a volume source – pCi/g
 - External exposures to soil/sediment as an area source – pCi/cm²
 - External radiation exposures to water – pCi/L
 - External exposures to air (i.e., submersion) – pCi/cm³

5.3.2 Chemical Intakes

A chemical intake occurs when a chemical is taken into the body via a route of exposure (i.e., ingestion, dermal absorption, or inhalation), then is subsequently absorbed into the bloodstream. Depending on the exposure route, chemical intakes are calculated as chronic daily intakes

(CDIs), dermally absorbed doses (DADs) and inhalation exposure concentrations (ECs), based on the appropriate guidelines. A CDI and DAD are determined as the mass of chemical absorbed into the bloodstream (in milligrams) per mass of body weight (in kilograms) per day (i.e., mg/kg/day). An inhalation EC is calculated in units of micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Chemical intakes via all routes in this HHRA are calculated using the algorithms in the RAIS online calculators (ORNL 2023) and EPA's online RSL calculator (EPA 2023a), in accordance with EPA's *Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part A)* (EPA, 1989). Additionally, DADs are calculated for dermal chemical exposures in accordance with EPA's *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)* (EPA 2004), and air exposure concentrations (ECs) to chemicals are calculated for inhalation exposures in accordance with EPA's *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment)* (EPA 2009). Both the RAIS and RSL calculators can determine intakes of chemicals in a variety of source media; therefore, these calculators are used in the calculations of all media/receptor scenario intakes in this HHRA.

5.3.3 Modeling to Determine Onsite and Offsite Radiological Exposures and Chemical Intakes

The primary source term in the RESRAD-OFFSITE and RESRAD-ONSITE models is an area source in which the source environmental medium is typically soil. However, for a source such as the evaporation pond, the pond sediment can be evaluated as the primary source medium in RESRAD. The RESRAD models can produce outputs for both radiological ELCR and dose for the area source. However, to evaluate scenarios in which a primary source medium is surface water or groundwater, another model or calculator must be used. Therefore, ORNL's online radiological RAIS calculators (ORNL, 2023) or EPA's online radiological peak PRG calculator (EPA, 2023b) can be used. These calculators generate outputs for cancer risks or PRGs, but do not generate radiological dose outputs. Therefore, to calculate dose (i.e., in mrem/yr) for sources other than area sources consisting of soil or sediment, EPA's online dose compliance concentration (DCC) calculator (EPA 2023c) is used. For this HHRA, all chemical calculations are performed using either ORNL's online RAIS calculators (ORNL, 2023) or EPA's online RSL calculator (EPA, 2023).

Model default and site-specific input values entered into the above-described calculators in combination with the medium-specific EPCs to estimate chemical intake and radionuclide exposure via each exposure pathway, for each receptor. Select non-default input values entered into the RESRAD model parameters are presented in Attachment D-11. RESRAD input values describing radiological exposures, as well as radiological decay and environmental transport are also provided in the model outputs presented in the Attachments D-14 and D-15 for Alternatives 1 and 2/3, respectively. The outputs from ORNL's online RAIS calculators for radiological exposures and chemical intakes, EPA's online radiological DCC calculator for radiological dose, and EPA's RSL calculator for determining chemical intakes also provide the respective calculator input values, which are presented in Attachments D-14 and D-15.

In addition to input values, the user guides included on the websites for each of the associated online calculators present the equations that are used in the calculations of radiological exposures and chemical intakes for the applicable receptor/pathway scenarios. Rather than present the

numerous exposure and intake equations, as well as supporting equations, that are available on the online guides, the links to the online calculator websites are provided:

- ORNL online RAIS calculators for radionuclides and chemicals (ORNL 2023): <https://rais.ornl.gov/>
- EPA online RSL calculator for chemicals (EPA 2023a): <https://www.epa.gov/risk/regional-screening-levels-rsls>
- EPA online radiological PRG (and risk) calculator (EPA 2023b): https://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg_search
- EPA online radiological DCC (dose) calculator (EPA 2023c): <https://epa-dccs.ornl.gov/>

6.0 Toxicity Assessment

The toxicity assessment describes the relationship between the magnitude of exposure to a constituent and the probability and magnitude of potential adverse effects. The toxicity assessment also presents levels of confidence in the quality of available toxicological data used for medium-specific COPCs identified in this HHRA. Toxicity assessment approaches for both radiological and chemical COPCs in Sections 6.1 and 6.2, respectively. Current toxicity values established for radiological COPCs are presented that are based on radiological cancer effects (i.e., CSFs) and dose (i.e., dose conversion factors [DCFs]). Current toxicity values established for chemical COPCs based on cancer effects (i.e., cancer slope factors [CSFs] and inhalation unit risks [IURs]) and noncancer effects (i.e., reference doses [RfDs] and inhalation reference concentrations [RfCs]) are also presented.

6.1 Radiological Toxicity Assessment

Health impacts from exposure to radiation and radionuclides are expressed as the risk of developing cancer. Radiological cancer risks and doses resulting from ingestion, inhalation, and external radiation exposures to uranium isotopes and associated decay chain progenies in onsite and offsite environmental media are estimated using internal and external radiation CSFs derived for morbidity and DCFs developed for these exposure routes. CSFs are used to convert exposures to radionuclides to an ELCR, while the DCFs are used to convert exposures to an average annual dose expressed in units of mrem per year.

Both the RESRAD-OFFSITE (Version 4.0) and RESRAD-ONSITE (Version 7.2) models incorporate the updated 2014 DCFs and morbidity CSFs calculated by the Oak Ridge National Laboratory (ORNL), as presented in ORNL's Technical Manual (TM) entitled *Calculation of Slope Factors and Dose Coefficients* (ORNL 2014). The derivations of these factors are based on updated decay chain and nuclide energy data presented in International Commission on Radiological Protection (ICRP) Publication 107, *Nuclear Decay Data for Dosimetric Calculations* (ICRP 2008). The following RESRAD-ONSITE Version 7.2 default CSFs and DCFs will be used based on ICRP-107: DCFPAK 3.02 (Adult) for the internal dose library, DCFPAK 3.02 for the external dose library, and DCFPAK 3.02 Morbidity for the CSFs. All CSFs used in this HHRA are morbidity (rather than mortality) CSFs. Attachment Table D-12-1 presents CSFs established for the ingestion, external radiation and inhalation routes of exposure. Similarly, Table D-12-2 presents DCFs established for the ingestion, external radiation and inhalation routes of exposure.

The 2014 ORNL soil ingestion CSFs are used in this HHRA to evaluate ingestion exposures to onsite pond sediment by a onsite workers and pond remediation workers at the pond (there are no carcinogenic COPCs identified for onsite trespassers), as well as offsite resident farmer

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exposures to offsite assumed to be impacted by pond dust emissions and subsequent air transport under Alternatives 1 and 2/3. The 2014 ORNL TM provides soil ingestion CSFs for “Soil Population” and “Soil Worker,” which are described as follows (ORNL 2014): “Population” refers to morbidity CSFs for ingestion of soil averaged over all ages in a population. Examples of soil ingestion include an individual directly ingesting soil, touching a soil-covered surface and then ingesting food without washing hands, and dust ingestion. “Soil Worker” refers to adult-specific CSF coefficients for soil ingestion and incorporates a different ingestion rate compared to that used for the general population. However, for the soil ingestion pathway, the current versions of the RESRAD-OFFSITE and RESRAD-ONSITE models apply by default, 2014 ORNL dietary CSFs, rather than the 2014 ORNL soil ingestion CSFs just described. The uncertainties resulting from the model-default application of the dietary CSFs to evaluate exposures via the soil/sediment ingestion pathways in this HHRA are discussed in the Uncertainties section (Section 8.0). The dietary CSFs are also used in this HHRA to evaluate exposures to the offsite resident farmer from consumption of homegrown produce, beef and dairy. Unlike the soil ingestion CSFs, the 2014 ORNL ingestion DCFs contained in the DCFPAK3.02 library are age-specific and are applicable to both the soil ingestion and dietary routes of exposure. The ingestion DCFs used in this HHRA are those derived for the adult age group.

To evaluate onsite ingestion exposures to pond surface water, the 2014 ORNL morbidity CSFs for tap water ingestion are used. The 2014 ORNL DCFs used are the adult factors that can be used for ingestion (i.e., applicable to water or any medium).

For inhalation, both CSFs and DCFs are presented in the 2014 ORNL TM according to types of absorption from the lung into the bloodstream, assuming the contaminant is in form of a particulate aerosol. Primarily, these include the following: S – slow absorption into the bloodstream; M – medium absorption into the bloodstream; and F – fast absorption into the bloodstream. For each radionuclide, the maximum inhalation CSF and DCF from among the three lung absorption types is incorporated into the RESRAD models. For the uranium isotopes the maximum CSFs and DCFs are the slow absorption (S) values.

For external radiation to radionuclides in soil, the 2014 ORNL TM presents options for DCFs and morbidity CSFs based on various source thicknesses: ground plane, 1 cm, 5 cm, 15 cm, and “soil volume.” The soil volume values are established for sources of infinite volumes/depths, and, when applied, typically yield the most health-conservative ELCRs and dose results. Therefore, in this HHRA, CSFs and DCFs established for infinite soil volume/depth are used to calculate ELCRs and doses, respectively.

In addition to the presentation of CSFs and DCFs for uranium isotopes in Attachment Tables D-12-1 and D-12-2, respectively, the factors used in the RESRAD-OFFSITE and RESRAD-ONSITE models, as well as the ORNL RAIS and EPA online calculators, are also presented in the respective outputs that are presented in Attachments D-14 and D-15.

6.2 Chemical Toxicity Assessment

The oral and inhalation toxicity values used in the HHRA for evaluating chemical exposures are obtained from EPA standard hierarchy of toxicity value sources (EPA 2003):

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- Tier 1 Source: Integrated Risk Information System (IRIS): Database available online through the National Center for Environmental Assessment in Cincinnati, Ohio. IRIS is maintained by EPA (EPA, 2023c).
- Tier 2 Source: EPA Provisional Peer Reviewed Toxicity Values: Provisional peer reviewed toxicity values generated for interim use and available from EPA.
- Tier 3 Sources: Other Peer Reviewed Toxicity Values.

These toxicity values are applied to the estimated intakes (described in Section 5.3.2 and 5.3.3) to quantify carcinogenic ELCRs and noncarcinogenic HQs and HIs for carcinogenic and noncarcinogenic COPCs, respectively the Impacts Characterization section (Section 7.0). The toxic effects of a chemical generally depend not only upon the inherent toxicity of the chemical and the level of exposure (intake), but also on the route of exposure (oral, inhalation, or dermal) and the duration of exposure. Thus, a full description of toxic effects of a chemical includes a listing of what adverse health effects the chemical may cause, and how the occurrence of these effects depends upon intake, route, and duration of exposure.

Toxicity values provided by EPA typically reflect administered dose values (i.e., they represent concentrations that are protective following ingestion or inhalation). However, the dermal route of exposure represents concentrations absorbed into the blood. Therefore, the absorbed dose concentrations identified for dermal exposure are compared to absorbed dose toxicity values derived by applying gastrointestinal absorption (GIABS) factors to administered dose toxicity values (EPA, 2004). For carcinogenic chemicals, the absorbed CSF is calculated by dividing the oral CSF by the GIABS. For noncarcinogenic chemicals, the absorbed RfD is calculated by multiplying the oral RfD by the GIABS. If a GIABS factor is not available for a specific COPC, the corresponding oral CSF or RfD is used by default when evaluating dermal exposures. Dust inhalation exposures to carcinogenic and noncarcinogenic chemical COPCs are evaluated using inhalation unit risks (IURs) and reference concentrations (RfCs), respectively.

6.2.1 Toxicity Assessment for Noncarcinogenic Effects

Attachment Tables D-13-1 and D-13-2 present oral/dermal RfDs and inhalation non-cancer RfCs, respectively, for each chemical COPC identified at Yard C, along with corresponding GIABS factors, primary target organs affected following exposures and/or critical effects, combined uncertainty/modifying factors, and sources of the toxicity data presented for each COPC. In this HHRA, chronic toxicity RfDs and RfCs are applied to all suburban resident receptors. Generally, exposure durations of 7 years or less, like for the pond sediment worker (1 year) and the offsite young child resident farmer (6 years, for ages 0 to 6) are representative of subchronic exposures. However, chronic toxicity values applied to the young child, rather than subchronic toxicity values, to provide for a more health-conservative calculation of HIs. Subchronic RfDs and RfCs are applied to evaluations of the pond remediation worker scenario, which assumes an exposure duration of 1 year.

6.2.2 Toxicity Assessment for Carcinogenic Effects

Tables D-13-3 and D-13-4 present oral/dermal CSFs and inhalation IUR values, respectively, for each chemical COPC identified the Alternatives 1 and 2/3 evaluation scenarios, along with corresponding GIABS factors, EPA cancer weight-of-evidence (WOE) classifications, and sources of the toxicity data presented for each COPC. Definitions of WOE classifications are provided in the table footnotes.

7.0 Impacts Characterization

The objective of the impacts characterization is to integrate the information developed in the exposure assessment and the toxicity assessment into a calculation and evaluation of the potential radiological dose, radiological and carcinogenic chemical ELCRs and noncarcinogenic hazards associated with the COPCs. Hazards include hazard quotients (HQs) calculated for individual non carcinogenic chemical COPCs and hazard indices (HIs) calculated cumulatively over multiple COPCs and pathways. Potential human health ELCRs and hazards are calculated and discussed separately for carcinogenic and noncarcinogenic COPCs, respectively, because of the different toxicological endpoints, relevant exposure durations, and methods used to estimate risk. When calculating radiological doses versus ELCRs, the exposure terms are calculated similarly; however, different factors are then used to convert the exposures into doses and ELCRs. Human health ELCRs for carcinogenic chemical and radiological COPCs are calculating differently, with the previously discussed RESRAD models and online calculators being used for the latter that incorporate radiological decay of parent isotope COPCs and the ingrowth of progeny isotopes that contribute to the ELCR. The same decay and ingrowth characteristics are applied to the calculation of radiological dose as well. Once calculated, radiological and chemical ELCRs are combined to determine the total receptor ELCR.

The methods and equations used to estimate carcinogenic chemical ELCRs, radiological dose and ELCRs and noncarcinogenic chemical hazards are discussed below in Sections 7.1.1, 7.1.2 and 7.1.3, respectively, along with the target limits to which the calculated values are compared.

7.1 Chemical and Radiological Cancer Risk and Dose Characterization

The potential for carcinogenic effects is characterized in terms of the incremental probability of an individual developing cancer over a lifetime because of site-related exposures to a potential carcinogen(s). The ELCR is estimated from the projected lifetime daily average intake and the CSF, the latter of which represents an upper bound estimate of the dose-response relationship.

7.1.1 Chemical Cancer Risk Characterization

To summarize the calculation process for chemicals, the ELCR associated with an ingestion ($ELCR_{ing}$) or dermal ($ELCR_{derm}$) exposure to a carcinogenic COPC is calculated for a given medium by multiplying the pathway-specific lifetime average daily chemical intake (i.e., expressed as the ingestion CDI [mg/kg-day] or dermal DAD [mg/kg-day]) by the corresponding oral CSF (CSF_o) [$[\text{mg/kg-day}]^{-1}$] or dermal CSF (CSF_d) [$[\text{mg/kg-day}]^{-1}$]. The generalized equations for calculating the ingestion and dermal ELCRs are as follows:

$$\begin{aligned} ELCR_{ing} &= CDI \times CSF_o \\ ELCR_{derm} &= DAD \times CSF_d \end{aligned}$$

The ELCR associated with the inhalation ($ELCR_{inh}$) of a carcinogenic COPC (i.e., as being adsorbed onto dust particulates emanating from soil or as a volatilized chemical) is calculated by multiplying the lifetime average exposure concentration (EC) ($\mu\text{g/m}^3$) by the IUR ($[\mu\text{g/m}^3]^{-1}$).

$$ELCR_{inh} = EC \times IUR$$

The ELCRs resulting from exposure to multiple carcinogens are assumed to be additive. The total receptor ELCR is estimated by summing the ELCRs estimated over all COPCs and over all pathways.

In the NCP (40 CFR Part 300), EPA states that for known or suspected carcinogens, target exposure levels are generally concentration levels that represent an ELCR between 1E-06 and 1E-04 (also referred to as the target risk range). All ELCRs calculated for individual COPCs, or summed over multiple COPCs, are first compared to the lower end of the target risk range (1E-06) as the point of departure for early stages of site investigations. Depending on site-specific needs driven by land usage, stakeholder interests, public concerns and comments, an agreed-upon target level that is determined to be acceptable for site cleanups (if needed) are negotiated to be within the target risk range. Typically, total ELCRs at or below 1E-04 typically do not warrant a response action. Total ELCRs estimated to be greater than 1E-04 for any exposure medium warrant further action for that medium under EPA policies and guidance.

7.1.2 Radiological Cancer Risk and Dose Characterization

Potential radiological ELCRs associated with ingestion, inhalation, and external radiation (i.e., based on soil volume and water immersion) exposures to individual radionuclides are calculated in a manner like that which is done for assessing chemical ELCRs, by multiplying intake estimates by radionuclide-/pathway-specific CSFs. However, the RESRAD-OFFSITE and RESRAD-ONSITE models also apply environmental transport factors into the calculations of exposure, as well as radiological decay and progeny ingrowth over time. In addition to calculation of ELCRs, the RESRAD models determine the annual total effective dose equivalents from exposures to parent isotope COPCs and decay chain progeny through application of radionuclide-/pathway-specific DCFs that convert exposure into annual dose in units of mrem/year. In the calculations of both ELCRs and doses, the RESRAD models apply the most recent decay chain data (i.e., energies and intensities of emitted radiations, physical half-lives and decay modes) available in the International Commission on Radiological Protection (ICRP) Publication 107. ICRP 107 provides the basis for the derivation of the most recent CSFs and DCFs available in ORNL's technical memorandum entitled "*Calculations of Slope Factors and Dose Coefficients*" (ORNL 2014).

Similar to chemical COPCs, the theoretical probability of developing cancer from exposure to two or more radionuclides is calculated by summing the ELCRs over the radionuclides. The ELCR for each radiological COPC, assumed to be the parent isotope, itself represents the sum of the ELCRs over the parent and associated decay chain isotopes. The total receptor ELCR is estimated by summing the ELCRs estimated over all COPCs (including ELCRs from contributing decay chain isotopes) and over all pathways. Similarly, the total annual dose for a receptor is estimated by summing the doses estimated over all COPCs (including doses from contributing decay chain isotopes) and over all pathways. In the RESRAD model inputs, total receptor ELCRs and doses are determined at various timesteps out to a maximum timestep of 1,000 years, depending on the receptor scenario. For example, the offsite resident farmer scenario is evaluated at eight timesteps evaluated over a 1,000-year period of evaluation (i.e., 0, 1, 3, 10, 30, 100, 300, and 1,000 years). On the other hand, the pond remediation worker, for whom an exposure duration of 1 year is assumed corresponding to the anticipated duration of decommissioning, is evaluated at 0 and 1 years. Each timestep represents the evaluated time at which exposure occurs relative to the analysis of the soil samples that are the basis of the data set used. The ELCRs and doses reported in the risk characterization and compared to the target limits represent the maximum total receptor values calculated over the period of evaluation (e.g., 1 year for the pond remediation worker; 1,000 years for a resident farmer).

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During impacts characterization, radiological doses are compared to the dose limit of 25 mrem per year for members of the general public (per DOE Order 458.1) and 5 rem per year (5,000 mrem per year) for onsite workers under the Alternative 1 evaluation and remediation workers under the Alternatives 2/3 evaluation (10 CFR 835.202). Radiological ELCRs are compared to EPA's target risk range of 1E-06 to 1E-04 (40 CFR Part 300).

7.1.3 Chemical Non-Cancer Hazard Characterization

The potential for noncarcinogenic health effects is evaluated by the calculation of HQs for individual COPCs, which are then summed to yield the HI. An HQ is the ratio of the daily intake averaged over the exposure duration for a given exposure route (i.e., ingestion CDI [mg/kg-day], dermal DAD [mg/kg-day], or inhalation EC [mg/m³]) to the corresponding chemical-specific oral RfD (RfD_o) (mg/kg-day), dermal RfD (RfD_d) (mg/kg-day), or inhalation RfC (mg/m³). The generalized equations for calculating the ingestion HQ (HQ_{ing}) and dermal HQ (HQ_{derm}) are as follows:

$$HQ_{ing} = CDI \div RfD_o$$
$$HQ_{derm} = DAD \div RfD_d$$

Similarly, the inhalation HQ (HQ_{inh}) is calculated as follows:

$$HQ_{inh} = EC \div RfC$$

The assumption of additive effects reflected in the HI is most properly applied to substances that induce the same effect by the same biological mechanism (EPA, 1989). Consequently, summing HQs for substances that are not expected to induce the same type of toxic effect will overestimate the potential for adverse health effects. The HI provides a measure of the potential for adverse effects, but it is conservative and dependent on the quality of experimental evidence. If a receptor is assumed to be exposed via multiple exposure routes and/or pathways, the HIs from all relevant exposure routes and/or pathways are summed to obtain the total HI for that receptor. If the total HI is less than or equal to 1, multiple-pathway exposures to COPCs at the site will be judged unlikely to result in an adverse effect. If the sum is greater than 1, further evaluation of exposure assumptions and toxicity, including consideration of specific target organs affected and mechanisms of toxic actions of COPCs is warranted to ascertain if the cumulative exposure would in fact be likely to harm exposed individuals. If the results of the further evaluations still indicate potential health effects in exposed individuals, then the development and evaluation of remedial alternatives may be warranted.

7.2 Impact Characterization Results

The potential impacts determined to onsite and offsite MEIs within the ROI relative to implementation of remedial Alternatives 1 and 2/3 are presented below, with medium-specific receptor radiological doses, radiological and carcinogenic chemical ELCRs, and noncarcinogenic chemical HIs being presented in Tables D-5, D-6 and D-7, respectively. Detailed COPC-specific and pathway-specific doses, ELCRs and HIs presented for Alternative 1 in Attachment D-16 and Alternatives D-17.

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Table D-5. Summary of human health radiological doses under Alternatives 1 and 2/3 (mrem per year)

Medium	Onsite Site Worker ^a	Onsite Trespasser ^b	Onsite Remediation Worker ^c	Downwind Offsite Farmer Resident (Air Transport) ^{d,e}						Downgradient Offsite Resident Farmer (Groundwater Transport) ^f		
				Location A	Location B	Location C	Location D	Location E	Location F	Receptor Location R0	Receptor Location R1	Receptor Location R2
Alternative 1 (No Action Alternative)												
Pond Sediment ^g	0.7	No Rad. COPCs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pond Surface Water	NA	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offsite Soil ^h	NA	NA	NA	0.00001	0.003	0.0001	0.0005	0.003	0.003	NA	NA	NA
Offsite Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	0.7	8	NA	0.00001	0.003	0.0001	0.0005	0.003	0.003	NA	NA	NA
Alternative 2/3 (Pond Dewatering, Sediment, and Liner Removal)												
Pond Sediment	NA	NA	13	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pond Surface Water	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offsite Soil ^{h,i}	NA	NA	NA	0.003	0.01	0.03	0.03	0.1	0.04	NA	NA	NA
Offsite Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	NA	NA	13	0.003	0.01	0.03	0.03	0.1	0.04	NA	NA	NA

Note: Footnotes are presented after Table B-7b.

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Table D-6. Summary of human health excess lifetime cancer risks from exposures to radionuclides and chemicals under Alternatives 1 and 2/3

Medium	Onsite Worker ^a	Onsite Trepasser ^b	Onsite Remediation Worker ^c	Downwind Offsite Farmer Resident (Air Transport) ^{d,e}						Downgradient Offsite Resident Farmer (Groundwater Transport) ^f		
				Location A	Location B	Location C	Location D	Location E	Location F	Receptor Location R0	Receptor Location R1	Receptor Location R2
Alternative 1 (No Action Alternative)												
Pond Sediment ^g	5E-07	No Carc. COPCs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pond Surface Water	NA	5E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offsite Soil ^h	NA	NA	NA	8E-12	2E-09	1E-10	4E-10	2E-09	2E-09	NA	NA	NA
Offsite Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	5E-07	5E-05	NA	8E-12	2E-09	1E-10	4E-10	2E-09	2E-09	NA	NA	NA
Alternative 2/3 (Pond Dewatering, Sediment, and Liner Removal)												
Pond Sediment	NA	NA	1E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pond Surface Water	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offsite Soil ^{h,i}	NA	NA	NA	2E-09	1E-08	3E-08	3E-08	8E-08	3E-08	NA	NA	NA
Offsite Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	NA	NA	1E-05	2E-09	1E-08	3E-08	3E-08	8E-08	3E-08	NA	NA	NA

Note: Footnotes are presented after Table B-7b.

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Table D-7a. Summary of human health hazard indices from exposures to noncarcinogenic chemicals under Alternative 1 and 2/3

Medium	Onsite Site Worker ^a	Onsite Trespasser ^b	Onsite Remediation Worker ^c	Downwind Offsite Farmer Resident (Air Transport) ^{d,e}						Downgradient Offsite Resident Farmer (Groundwater Transport) ^f		
				Location A	Location B	Location C	Location D	Location E	Location F	Receptor Location R0	Receptor Location R1	Receptor Location R2
Alternative 1 (No Action Alternative)												
Pond Sediment ^g	0.2	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pond Surface Water	NA	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offsite Soil	NA	NA	NA	No Noncarc. COCs						NA	NA	NA
Offsite Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	6	1
Total	0.2	29	NA	No Noncarc. COCs						7	6	1
Alternatives 2/3 (Pond Dewatering, Sediment, and Liner Removal)												
Pond Sediment	NA	NA	1	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pond Surface Water	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offsite Soil	NA	NA	NA	No Noncarc. COCs						NA	NA	NA
Offsite Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	NA	NA	1	No Noncarc. COCs						NA	NA	NA

Note: Footnotes are presented after Table B-7b.

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Table D-7b. Target organ hazard indices for noncarcinogenic chemicals

Target Organs	Target Organ HIs by Receptor/Medium			
	Alternative 1 Onsite Trespasser (Pond Surface Water) ^j		Alternative 2/3 Onsite Remediation Worker (Pond Sediment) ^j	
	HI	COC	HI	COC
Total Bones, Teeth / Skeletal Fluorosis HI Across All Media =	0.2	Fluoride	NA	NA
Total Cardiovascular HI Across All Media =	0.3	Arsenic	NA	NA
Total Dermal HI Across All Media =	2	Arsenic, Thallium	NA	NA
Total Neuological HI Across All Media =	0.2	Manganese	0.7	Manganese
Total Renal HI Across All Media =	27	Uranium	0.7	Uranium
Total Selenosis HI Across All Media =	0.8	Selenium	NA	NA

Key: HI = hazard index; COC = contaminant of concern; COPC = contaminant of potential concern; NA = not applicable; No Carc. COCs = no carcinogenic COCs (radiological or chemical) were identified; No Noncarc. COC = no noncarcinogenic chemical COCs were identified

^a The onsite worker was evaluated for pond sediment exposures under Alternative 1. The use of personal protective equipment under Alternative 1 would likely eliminate surface water exposures ; therefore, surface water exposures are not evaluated. The onsite worker is not evaluated for sediment exposures under Alternatives 2/3 as the remediation worker represents the more health-conservative worker scenario during remediation.

^b The trespasser is assumed to be an individual of ages 11 to 20 years old who is exposed to pond surface water and sediment under Alternative 1, for 1 hour per day, 75 days per year, over 10 years. Under Alternative 2, the presence of additional fencing and security measures prevents trespasser access to the evaporation pond; therefore, this receptor is not evaluated under Alternative 2. Predominant COCs under Alternative 1 contributing to ELCRs > 1E-06 for trespasser exposures to surface water are uranium-234, uranium-238, and arsenic via ingestion, and arsenic via dermal contact.

^c The remediation worker is at the site only during implementation of Alternatives 2/3 and is evaluated for dry sediment exposures. Although PPE and other health & safety measures are likely to be implemented during Alternatives 2/3 remediation, none are hypothetically assumed in order to evaluate maximum exposures. Pond dewatering under Alternatives 2/3 eliminate all surface water exposure pathways for this receptor. Predominant COCs under Alternative 2 contributing to ELCRs > 1E-06 for the remediation worker exposures to surface water are uranium-234 and uranium-238 via dust inhalation.

^d Under Alternative 1, offsite resident farmers at locations A through F are evaluated for exposures to windblown sediment dusts that are atmospherically transported from the evaporation pond (assuming no surface water cover), while undergoing dispersion, then deposition onto offsite soil. The resident farmer is exposed via the following pathways: soil ingestion, external radiation from soil, inhalation of dusts from the pond (prior to deposition), inhalation of resuspended dusts from offsite soil, and the consumption of homegrown fruits and vegetables, meat and dairy. Groundwater impacts from deposition are negligible. Radiological ELCRs are based on the maximum total ELCRs calculated over a 1,000-year

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period of evaluation. Groundwater impacts from subsurface migration from beneath the pond does not occur as locations A through F are situated upgradient or crossgradient from the flow of pond contaminants in groundwater.

^e Under Alternatives 2/3, offsite resident farmers at locations A through F are evaluated for exposures to windblown sediment dusts that are atmospherically transported from the evaporation pond (assuming no surface water cover), while undergoing dispersion, then deposition onto offsite soil. Exposures to pond dusts are evaluated for one year during Alternatives 2/3 remediation. Post-remedy exposures to offsite soil (i.e., after source removal of the pond) are then evaluated for a 1,000-year period of evaluation. The resident farmer is exposed via the following pathways: soil ingestion, external radiation from soil, inhalation of dusts from the pond (prior to deposition), inhalation of resuspended dusts from offsite soil, and the consumption of homegrown fruits and vegetables, meat and dairy. Groundwater impacts from deposition are negligible. Groundwater impacts from subsurface migration from beneath the pond does not occur as locations A through F are situated upgradient or crossgradient from the flow of pond contaminants in groundwater.

^f Groundwater transport of sediment contaminants leaking through the evaporation pond liner to the subsurface is modeled away from pond to three maximally exposed downgradient receptor locations (R0, R1 and R2), where exposure is hypothetically assumed to occur. Receptor location 0 (R0) is at the downgradient edge of the pond. Receptor Location 1 (R1) is at pumping well 1093R. Receptor Location 2 (R2) is at the San Juan River. Exposure pathways evaluated include drinking water ingestion, dermal contact, external radiation (i.e., immersion), and consumption of produce, meat and milk affected by agricultural irrigation and watering of livestock. No radiological or carcinogenic chemical COPCs were identified for groundwater under Alternative 1. Nitrate as nitrogen is the only chemical COPC evaluated, which is noncarcinogenic. The HI results shown are those for the young child resident farmer (ages 0 to 6 years old), which is associated with the most health-conservative HI values. With only one noncarcinogenic COPC having been evaluated, no target organ analysis is necessary.

^g Dry sediment exposures are assumed for all receptor scenarios under Alternatives 1 and 2 to provide more health-conservative evaluations due to the greater availability of dry sediments for human exposures, than sediments that are under water. Airborne sediment dust exposures at downwind offsite receptor locations are evaluated as offsite soil.

^h ELCRs and radiological doses associated with offsite soil are due entirely to uranium isotopes. No chemical COCs were identified in offsite soils because they are all less than screening levels.

ⁱ ELCRs and doses presented for each offsite soil location under Alternative 2/3 represent the sums of the total ELCRs and doses calculated for exposures that occur during remediation and after remediation (post-remedy).

^j COCs contributing to target organ HIs > 1 are presented in bold font.

Note: ELCRs presented in bold font exceed the lower limit of EPA's target risk range of 1E-06 to 1E-04 (i.e., 1E-06). HIs presented in bold font exceed the EPA's target limit of 1.

Alternative 1

- Table D-5 shows that the radiological dose calculated for the onsite trespasser, as well as all doses calculated for the offsite resident farmer at all offsite locations, for combined exposures over all pathways, are less than 25 mrem/yr. The dose calculated for the onsite worker for combined exposures over all pathways is less than the 5,000 mrem/yr occupational limit. The receptor specific doses calculated for onsite and offsite MEIs are as follows: onsite worker = 0.7 mrem/yr; onsite trespasser = 8 mrem/yr; and the maximum offsite resident farmer (locations B, E, and F) = 0.003 mrem/yr.
- Table D-6 shows that the ELCR calculated for an onsite worker (5E-07) is less than the lower end of EPA's ELCR evaluation range (1E-06). However, ELCR for the onsite trespasser (5E-05) exceeds 1E-06. Attachment Table D-16-2 shows that the exceedance is due to incidental ingestion exposures to uranium-234, uranium-238 and arsenic in pond surface water. Although exceeding the lower end of EPA's ELCR evaluation range, the onsite trespasser ELCR is less than the upper upper end of 1E-04. Finally, Table D-6 also shows that the ELCRs calculated for the offsite resident farmer at all six atmospheric receptor locations are well below 1E-06, with the maximum ELCR being 2E-09 at locations B, E and F.
- Table D-7a show that the total HIs for the onsite worker and onsite trespasser are 0.2 and 29, respectively. The total onsite worker HI is less than the target limit of 1. For the trespasser, a subsequent target organ analysis in Table D-7b shows that the target organ HIs calculated for health impacts to the skin and kidneys (2 and 27, respectively) for an onsite trespasser each exceed EPA's target HI of 1. Attachment Table D-16-2 shows that impacts to the kidneys are due to incidental ingestion and dermal exposures to uranium in pond surface water. Dermal impacts to the onsite trespasser are due to combined incidental ingestion exposures to arsenic and thallium in pond surface water, with thallium being the predominant contributor to the HI of 2. However, as discussed in Section 8.3, the thallium HI calculated for the trespasser is likely an overestimation of the actual HI due to a high level of uncertainty associated with the RfD_o used in the HI calculations, in conjunction with the health-conservative assumptions applied regarding trespasser surface water exposures. Additionally, land use controls at the site including entrance gates and perimeter fence and signs reduce the likelihood of trespassers accessing the evaporation pond area. Because thallium has never been identified as a site chemical of concern, the detected sample concentrations reported for thallium in pond surface water are compared to water quality standards, criteria, and screening levels in Table D-8. The comparisons show that only the Navajo Nation EPA surface water quality standard for primary and secondary human contact exceed the concentrations detected in pond surface water.
- No chemical HI calculations were necessary for offsite resident farmer exposures resulting from contaminants in air, as well as contaminants in offsite soil (from deposition). This is because the maximum offsite concentrations of all chemicals in these media, as calculated based on attenuation that occurs during simulation of atmospheric transport and dispersion of radionuclides using the RESRAD-OFFSITE, are less than the corresponding screening levels for the resident farmer.
- Table D-7a presents a total HI of 7 for a resident farmer child (the most sensitive resident farmer age groups) at hypothetical downgradient groundwater receptor location R0 (located at the eastern downgradient edge of the evaporation pond). Attachment Table D-16-4 shows that the HI exceeds the target limit of 1 due to ingestion exposures to nitrate

(as nitrogen) in groundwater used as drinking water. The target organ and critical effect resulting from exposures to elevated concentrations of nitrate are the blood and methemoglobinemia, respectively.

- Table D-7a presents a total HI of 6 for a resident farmer child at hypothetical downgradient receptor location R1 (i.e., pumping well location 1093R located north of the western portion of the pond). Attachment Table D-16-5 shows that the HI exceeds the target limit of 1 due to ingestion exposures to nitrate (as nitrogen) in groundwater used as drinking water. The target organ and critical effect resulting from exposures to elevated concentrations of nitrate are the blood and methemoglobinemia, respectively.
- Table D-7a presents a total HI of 1 for a resident farmer child at hypothetical downgradient receptor location R2 (i.e., located at the San Juan River), which approximates EPA's target HI of 1. Therefore, no adverse health impacts are estimated for offsite resident farmer use of drinking water at this location.

Table D-8. Comparisons of evaporation pond surface water concentrations for thallium with numerical water quality standards, criteria, and risk-based screening levels

Source	Thallium Concentration (mg/L)
Evaporation Pond Surface Water Concentration Range	0.014 – 0.038
Calculated Trespasser COPC Screening Level for Surface Water (Attachment D-2-6) ^a	0.0025
SWQS for Domestic Water Supply	0.002
SWQS for Fish Consumption	0.001
SWQS for Primary and Secondary Human Contact	0.075
AWQC for Protection of Human Consumption of Surface Water and Organisms	0.00024
AWQC for Protection of Human Consumption of Organisms Only	0.00047
EPA Drinking Water MCL	0.002
EPA Tap Water RSL ^b	0.0002

Sources: Navajo Nation EPA, 2017; EPA, 2023a; EPA, 2023e

Key: AWQC = ambient water quality criterion; MCL = maximum contaminant level; mg/L = milligrams per liter; RSL = regional screening level; SWQS = surface water quality standard

^a Calculated trespasser screening level targets a noncancer HQ of 0.1.

^b EPA Tap water RSL presented targets a noncancer HQ of 1.

Alternatives 2/3

- Table D-5 shows that the radiological dose calculated for the pond remediation worker for combined exposures to sediment over all pathways is less than the 5,000 mrem/yr occupational limit. The radiological doses calculated for the offsite resident farmer at all locations, for combined exposures over all pathways, are less than 25 mrem/yr. The receptor specific doses calculated for onsite and offsite MEIs are as follows: pond remediation worker = 13 mrem/yr; and the maximum offsite resident farmer (location E) = 0.1 mrem/yr.
- Table D-6 shows that the ELCR calculated for a pond remediation worker (hypothetically assumed to not be using health and safety controls) of $1\text{E-}05$ exceeds the lower limit end of EPA's ELCR evaluation range ($1\text{E-}06$). Attachment Table D-17-1 shows that the exceedance is due to inhalation of uranium-234 and uranium-238 in pond sediment dust emissions during decommissioning. Although exceeding EPA's lower end of the ELCR evaluation range, the pond remediation worker ELCR is a factor of 10 times less than the upper end of EPA's ELCR evaluation range ($1\text{E-}04$). Implementation of proper health and safety precautions should result in significant risk reduction. Table D-6 also shows that the ELCRs calculated for the offsite resident farmer at all six atmospheric receptor locations are well below $1\text{E-}06$, with the maximum ELCR being $8\text{E-}08$ at location E.
- Table D-7a shows that total HI for pond remediation worker approximates EPA's target limit of 1. However, Table D-7b further demonstrates that all target organ HIs calculated for a pond remediation worker (hypothetically assumed to not be using health and safety controls) are less than EPA's target HI of 1. The target organ HIs for this receptor are as follows: neurological HI due to manganese exposures = 0.7; and the kidney HI due to uranium exposures is 0.7. Therefore, no adverse systemic effects are likely for the pond remediation worker during decommissioning.
- No chemical HI calculations were necessary for offsite resident farmer exposures resulting from contaminants in air during decommissioning and contaminants remaining in post-remedy offsite soil (from deposition). This is because the maximum offsite concentrations of all chemicals in these media, as calculated based on attenuation that occurs during simulation of atmospheric transport and dispersion of radionuclides using the RESRAD-OFFSITE, are less than the corresponding screening levels for the resident farmer.

8.0 Uncertainties

Uncertainties are inherent in all components of the HHRA process (i.e., data evaluation, exposure assessment, and toxicity assessment), as well as in the procedures used in calculating and characterizing health risks to potential residents. A qualitative assessment of uncertainties and the resulting impacts of potentially overestimating or underestimating impacts determined for the MEIs is discussed in this section.

8.1 Sediment Matrix

Eleven sediment samples were collected from the groundwater evaporation pond that were located within random systematic grid. However, a vast portion of the sediment was found to be a hardened salt matrix. Loose muddy sediment was observed along the perimeter of the pond (approximately 8 ft from the edge). Sampling based on the predetermined grid has resulted in the samples being collected from the salt matrix and therefore, does not represent actual sediment. The analytical challenges presented by the presence of the matrix is unknown. However, calculations and modeling performed to determine impacts incorporated input values, where

possible, that accounted for physical characteristics of the sediment, such as density of salt (which is greater than the density of soil/sediment), thickness, etc. However, because the salt matrix is a solidified, monolithic mass, it is expected that the bioavailability of contaminants bound up in the matrix, particularly under the Alternative 1 evaluations, is reduced when compared to the bioavailability of similar contaminants in a loose sediment matrix, typically encountered in ponds. Therefore, in an attempt to not underestimate impacts to human health associated with the salt matrix, the HHRA assumes that the salt matrix exists in a looser, more aggregate form. This assumption tends overestimate actual human health impacts associated with onsite worker and trespasser exposures, as they are evaluated under Alternative 1.

During implementation of Alternatives 2 and 3, the salt matrix is broken up and mixed with a drying/solidifying amendment to reduce the moisture content to a level needed for excavation, packaging and transport to an offsite disposal facility. Therefore, the HHRA assumption of a loose aggregate form represents a set of exposure conditions that are likely to be more realistic relative to actual exposure conditions that would be encountered by a pond remediation worker during implementation of Alternatives 2 and 3. The addition of amendment to remove moisture could also result in a slight dilution effect of the original (pre-amendment) concentrations that were reported during data collection. Therefore, the assumption of a salt matrix comprised of a looser aggregate is expected to slightly overestimate the actual human health impacts associated with a pond remediation worker, as evaluated under Alternatives 2/3.

8.2 Health and Safety

The onsite worker under Alternative 1 and the pond remediation worker under Alternatives 2 and 3 are both evaluated in a manner designed to not underestimate actual exposures to pond media by hypothetically assuming that the workers do not follow health and safety BMPs and do not use PPE. However, workers are currently protected and would be protected during decommissioning via implementation of DOE requirements (e.g., 10 CFR Part 835, “Occupational Radiation Protection,” and 10 CFR Part 851, “Worker Safety and Health Program and Administration Procedures.”). Therefore, the assumption of no health and safety practices overestimates human health impacts calculated for these MEI scenarios under all three of the remedial alternatives evaluated.

8.3 Trespasser Exposures to Thallium in Pond Surface Water under Alternative 1

Based on the impacts analysis, incidental ingestion of thallium and arsenic in evaporation pond surface water, by onsite trespassers, result in a total target organ HI of 2 for the skin. The detailed results table (Table D-16-2) shows that the thallium HI of 1.3 contributes predominantly to the total noncancer HI and that the arsenic HI of 0.3 is a less significant contributor. Thallium is the predominant HI contributor because the current EPA-approved RfD_o used to calculate the ingestion and dermal HIs is a provisional value that is associated with a high degree of uncertainty, with EPA having assigned an uncertainty factor (UF) of 3,000 to the RfD_o. which biases the RfD_o low, resulting in HIs that are biased high, due to the inverse relationship. The uncertainties not only include the UF of 3,000 for thallium, but the fact that, based on the assumptions in the calculations, a trespasser would have to accidentally ingest pond surface water at a rate of 100 milliliters per hour, 1 hour per day, for 75 days per year, over 10 years to incur dermal impacts. Therefore, the HI calculation is highly likely to overestimate the actual HI for a trespasser at the pond, so the discussion of thallium as an impact driver is removed from Section 3.11.2.1 text. However, because the cumulative HI of 2 cannot be ignored, it is discussed in Appendix D, in the context of the uncertainties inherent with thallium toxicity and the

exposure assumptions used in the HI calculations to demonstrate that impacts to trespassers exposed to surface water are highly unlikely.

8.4 Resident Farmer Evaluations

When assessing potential human health impacts associated with Alternatives 1, 2, and 3 at offsite locations, maximum health conservatism was applied in the HHRA by the identification and evaluations of the resident farmer as the offsite MEI. This assumption is likely to overestimate actual impacts to offsite receptors because realistically, most individuals in close proximity to the evaporation pond, if any, grow and consume fruits, vegetables and grains, while raising livestock and consuming homegrown meat and dairy as a means of subsistence. The resident farmer evaluations are not meant to reflect actual land use, but rather is evaluated as a hypothetical, worst case scenario.

Under the worst-case scenario, no human health impacts are expected from dusts assumed to be released from the pond under all alternatives. Evaluation of the atmospheric transport pathways for contaminants in dust emissions incorporated conservative assumptions to ensure that actual potential human health impacts are not underestimated. Offsite exposures to pond dusts may only occur under Alternative 1 if groundwater pumping ceases, the surface water evaporates or percolates into the subsurface, and the sediment is allowed to dry. Under Alternative 2, the pond is dewatered, and the sediments are excavated and continuously dumped, thereby making the release of dusts into the air, with subsequent transport to offsite locations a plausible scenario. However, the use of dust suppression measures during decommissioning as a BMP will greatly reduce the level of dust emissions that could ever go offsite. Therefore, assumptions made regarding the atmospheric transport of dusts to offsite resident farmer locations under all three remedial alternatives tend to overestimate actual human health impacts.

Pond contaminant releases (through the liner) to downgradient groundwater at hypothetical offsite receptor locations do show that human health impacts would be expected from potable use of groundwater drawn in close proximity to the pond (e.g., within 50 meters to the north and east of the pond) due to the presence of nitrate. No impacts are expected to occur from potable use of groundwater hypothetically drawn at a receptor location placed adjacent to the San Juan River, at the shortest downgradient distance from the evaporation pond (i.e., approximately 600 meters to the east northeast). The assumption of potable groundwater use by a resident farmer, or any population group, overestimates actual human health impacts likely to occur under all three remedial alternatives, particularly under Alternative 1, because groundwater in both the floodplain and terrace is not currently used for any purpose and is not considered potable. Treated water for the Shiprock community is provided through an interconnection with the municipal supply of Farmington, New Mexico, and is sourced from the Animas River (DOE, 2022b).

8.5 Resident Farmer Soil Ingestion Rates

When running calculations using the RESRAD-OFFSITE model for the resident farmer scenarios, the model default ingestion rate of 36.5 g/yr was used. This value is based on EPA's default value of 100 mg/day (EPA 2014) assuming soil ingestion by an adult that occurs 365 days per year. Typically, an age adjusted value is applied that assumes ingestion by not only an adult over a twenty-year duration, but a young child (ages 0 to 6 years) over a six-year duration. With the default child ingestion rate being 200 mg/day (EPA 2014) and the adult rate being 100 mg/day, an age-adjusted value of 120 mg/day is calculated which equates to 44.9 g/yr. The age-adjusted rate was used in the RESRAD-ONSITE calculations but not in the RESRAD-OFFSITE

calculations, indicating that offsite exposures may be slightly underestimated. A further review of RESRAD-OFFSITE model outputs reveals that the maximum percent contribution to a total radiological dose or ELCR was approximately 9 percent. Considering the maximum percent dose and ELCR contribution from the soil ingestion pathway, in conjunction with the fact that all total receptor doses and ELCRs are well below 25 mrem/yr and 1E-06, respectively, for the offsite resident farmer, no change in outcome relative to impacts characterization is expected for this receptor if the age-adjusted soil ingestion rate had been applied. The soil ingestion rate discrepancy applies only to the RESRAD models run and is the result of user error. This discrepancy does not apply to the online calculators because residential age-adjusting is applied by default.

8.6 RESRAD Default Use of Dietary Cancer Slope Factors for Soil Ingestion Pathway

The current versions of both the RESRAD-OFFSITE (Version 4.0) and the RESRAD-ONSITE (Version 7.2) models incorporate CSFs recently derived and presented in ORNL's technical memorandum (TM) entitled *Calculation of Slope Factors and Dose Coefficients* (ORN 2014). For the ingestion pathway, CSFs are available in the TM for the dietary pathways, as well as for soil ingestion. Two sets of soil ingestion CSFs are available: "Soil Population" and "Soil Worker". The former grouping of CSFs include data in the derivations representative across age groups that can be applied to evaluations for residential scenarios, whereas the latter grouping of CSFs are used for evaluating worker scenarios. However, both RESRAD models apply dietary CSFs, by default, to the evaluations of the soil ingestion pathway that result in uncertainties inherent with ELCRs calculated for both residential and worker scenarios. Table D-9a presents a comparison of all three soil ingestion pathways, where it is shown that the soil population CSFs for the uranium isotope COPCs (with decay chain contributions incorporated) are greater than the corresponding dietary factors by a factor represented by the percent difference (%D) shown for each pair of CSFs (i.e., soil population vs dietary). This indicates that use of the model default use of dietary factors underestimate ELCRs for residential soil ingestion exposures by as much as 63 percent (as calculated for uranium-238. In contrast, the soil worker CSFs are less than the corresponding dietary CSFs by as much as 54 percent, such that worker ELCRs calculated using dietary CSFs are overestimated by as much as 54 percent.

Table 9a. Comparisons of dietary cancer slope factors with soil ingestion cancer slope factors

COPC ^a	CSF for Ingestion (Risk/pCi)				
	Dietary CSF	Soil Population		Soil Worker	
		CSF	%D from Dietary CSF ^b	CSF	%D from Dietary CSF ^b
Uranium-234	9.55E-11	1.48E-10	55%	5.11E-11	-46%
Uranium-235+E	9.77E-11	1.54E-10	58%	5.00E-11	-49%
Uranium-238+E	1.21E-10	1.97E-10	63%	5.62E-11	-54%

Source: ORNL, 2014

Key: % = percent; %D = percent difference COPC = contaminant of potential concern; CSF = cancer slope factor; pCi = picocuries

^a "+E" Indicates risk contributions from 1,000-year decay chain are included in the CSFs presented.

^b %D (Percent difference) from dietary CSF is calculated for each soil ingestion CSF as follows: $\%D = [(Ingestion\ CSF - Dietary\ CSF) / Dietary\ CSF] \times 100\%$

Therefore, with the concern being the underestimation of residential ELCRs for the soil ingestion pathway for the offsite residential farmer, an evaluation was performed as shown in Table D-9b to assess the impact of this uncertainty. The evaluation was performed using the maximum case

soil ingestion ELCR, which was calculated for Location E under the Alternatives 2/3 scenario (see Attachment Table D-17-4). The ELCRs calculated for offsite residential farmer soil ingestion exposures of uranium-234, uranium-235 and uranium-238 at Location E are 4E-12, 3E-13 and 4E-12, respectively. Estimating the ELCRs if the soil population CSFs were used, by application of the soil ingestion CSF to dietary CSF %D values, results in the soil ingestion ELCRs being as follows for the resident farmer: uranium-234 = 6E-12, uranium-235 = 4E-13 and uranium-238 = 7E-12. Therefore, use of soil population ingestion CSFs would result in an insignificant increase in the soil ingestion ELCRs over those calculated using the dietary CSFs, relative to the lower limit of EPA's target risk range (1E-06). This difference would seem even more insignificant relative to total receptor ELCRs calculated for offsite resident farmers, given the low percent ELCR contribution from the soil ingestion pathway to the total receptor ELCR.

Table D-9b. Estimation of soil ingestion excess lifetime cancer risks (ELCR) based on use of soil population cancer slope factor (CSF)

COPC	ELCR Based on Dietary CSF ^a	Estimated ELCR Based on Soil Population CSF ^b
Uranium-234	4E-12	6E-12
Uranium-235	3E-13	4E-13
Uranium-238	4E-12	7E-12

Key: CSF = cancer slope factor; ELCR = excess lifetime cancer risks

^a Maximum case soil ingestion risk based on RESRAD-OFFSITE default dietary CSFs are presented from evaluation of Location E under Alternatives 2/3 (see Attachment Table D-17-4).

^b Estimated ELCR based on use of the soil population CSF (ORNL, 2014) is calculated as follows:
 $ELCR_{SP} = ELCR_D + (ELCR_D * \%D_{SP})$, where: $ELCR_{SP}$ = estimated ELCR based on use of soil population ingestion CSF; $ELCR_D$ = ELCR calculated in RESRAD-OFFSITE based on dietary CSF (see Attachment Table D-17-4 for Location E soil ingestion); $\%D_{SP}$ = percent difference of soil population ingestion CSF over dietary CSF (see Table 8a).

9.0 Conclusions

Based on the results of the HHRA, Sections 9.1 and 9.2 present conclusions regarding the short- and long-term human health impacts expected for onsite and offsite MEIs, within the ROI, relative to the implementation of the remedial Alternative 1 and Alternatives 2/3, respectively.

9.1 Alternative 1 Human Health Impacts

Short-term potential health impacts could occur to trespassers who are frequently exposed (i.e., 1 hour per day, 75 days per year) to uranium-234, uranium-238, arsenic, thallium, and uranium due to ingestion of and dermal contact with pond surface water. However, the presence of surface water in the pond mitigates the potential for pond sediment dust emissions, thereby preventing atmospheric exposures to offsite individuals. Additionally, in the short-term, pond contaminants can leak to the subsurface and groundwater beneath the pond. Because groundwater beneath the pond is not used for potable purposes, there are no human health impacts (due to no exposure pathways).

Long-term human health impacts could result from continued surface water exposures to onsite trespassers if there is a loss of access restrictions that prevent trespassing. Additionally, the potential loss of surface water over time (assuming that the current groundwater pumping system ceases operation) could result in the drying of pond sediment and generation of wind-driven dust emissions and air transport, resulting in exposures to downwind, offsite individuals. However, the impacts analysis shows that offsite health impacts could be insignificant due to dispersion and deposition. Additionally, in the long-term, groundwater modeling has shown that pond

contaminants will continue to leak through the liner and infiltrate the groundwater beneath the pond. Once in the groundwater, horizontal migration to offsite locations could occur. However, no human health impacts are expected because groundwater in both the floodplain and terrace is not currently used for any purpose and is not considered potable. Treated water for the Shiprock community is provided through an interconnection with the municipal supply of Farmington, New Mexico, and is sourced from the Animas River (DOE, 2022b). Although the contaminant of concern in groundwater, nitrate (as nitrogen), is not expected to reach the reach the San Juan River in approximately 60 years, no human health impacts at the downgradient to the river, as well as impacts to the river itself, are expected.

9.2 Alternatives 2/3 Human Health Impacts

During decommissioning of the pond, and assuming that hypothetically, there are no health and safety BMPs or use of PPE, slightly elevated cancer risk could occur in the short-term to pond remediation workers. The short-term human health impacts are expected from remediation worker inhalation exposures to uranium-234 and uranium-238 in dust emissions generated by mechanical disturbances of pond sediment. However, this risk becomes insignificant with the implementation of health and safety BMPs and use of PPE. No short-term impacts are estimated for offsite individuals via atmospheric transport of pond sediment dusts generated during decommissioning. Currently, terrace groundwater is not used for potable purposes at onsite or offsite locations. However, contaminant impacts to groundwater during decommissioning are likely to not cause human health impacts.

In the long-term, following completion of the pond media and liner, all exposure pathways are expected to be mitigated with the removal of contaminant source media. Consequently, the potential for health impacts to onsite individuals is eliminated. Evaluations of post-remedy, offsite exposures show no long-term health impacts to offsite individuals from any pond sediment contaminants remaining in soil after air deposition ceases with the completion of decommissioning. Potential impacts to offsite groundwater from any pond sediment contaminants remaining in soil after air deposition ceases with the completion of decommissioning are not expected. No offsite groundwater impacts are expected for locations located directly downgradient of the “former” pond area, including the San Juan River, because all primary source media and contaminants will have been removed.

9.3 Summary

In summary, the only potentially adverse human health impacts estimated to result from any of the three remedial alternatives would be due to uranium-234, uranium-238, arsenic, thallium, and uranium exposures to an onsite trespasser from incidental ingestion of surface water and dermal contact with surface water under Alternative 1. Frequent exposures to a trespasser could result in elevated cancer risks, along with possible adverse systemic effects to the skin and kidneys. Continued (and possibly tighter) access controls restricting pond access to only authorized persons would mitigate potential human health risks to unauthorized persons. This conclusion also assumes that proper health and safety measures continue to be used for onsite workers and will be used for pond remediation workers, and that groundwater is not used for potable purposes.

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ATTACHMENT D-1

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Table D-1-2. Groundwater Evaporation Pond Sediment Statistical Data Summary, November 2022
Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Units	Range of Detections ^a		Location of Maximum Detection ^a		Detection Frequency ^a			Number of Nondetects ^a	Range of MDLs ^a		Mean ^b	Standard Deviation ^b	Median ^c	EPC Calculations for HHRA				
																UCL95 ^b	UCL Statistical Basis	EPC ^d	EPC Basis	
			Minimum	Maximum	Location ID	Sample ID					Minimum	Maximum								
Radiological Parameters																				
12587-46-1	Gross Alpha	pCi/g	5.92	42	7002	SHP02-02.2301003-004		12	/	12	0	---	---	17.45	9.826	17.9	22.82	95% Student's-t UCL	22.82	UCL95
12587-47-2	Gross Beta	pCi/g	5.85	51.7	7002	SHP02-02.2301003-004		12	/	12	0	---	---	23.14	14.95	19.1	31.31	95% Student's-t UCL	31.31	UCL95
11-08-5	Uranium-233/234	pCi/g	4.48	19.2	7001	SHP02-02.2301003-003		12	/	12	0	---	---	12.01	5.208	12.6	14.85	95% Student's-t UCL	14.85	UCL95
U-235+236	Uranium-235/236	pCi/g	0.302	1.12	7009 / 7010	SHP02-02.2301003-011 / -012		11	/	12	1	---	---	0.778	0.307	0.935	0.955	95% KM (t) UCL	0.955	UCL95
7440-61-1	Uranium-238	pCi/g	4.33	17.1	7001	SHP02-02.2301003-003		12	/	12	0	---	---	10.51	4.699	10.3	13.08	95% Student's-t UCL	13.08	UCL95
Metals																				
7440-38-2	Arsenic	mg/kg	0.688	0.688	7010	SHP02-02.2301003-012		1	/	12	11	0.432	0.761	---	---	---	---	---	0.688	Maximum
7440-39-3	Barium	mg/kg	0.741	19.7	7010	SHP02-02.2301003-012		12	/	12	0	0.128	0.225	4.656	5.349	3.67	9.145	95% Adjusted Gamma UCL	9.145	UCL95
7440-43-9	Cadmium	mg/kg	0.0633	0.0633	7010	SHP02-02.2301003-012		1	/	12	11	0.0256	0.045	---	---	---	---	---	0.0633	Maximum
7440-70-2	Calcium	mg/kg	4,480	88,700	7007	SHP02-02.2301003-009		12	/	12	0	204	352	30,119	29,960	21,500	60,803	95% Adjusted Gamma UCL	60,803	UCL95
7439-92-1	Lead	mg/kg	0.22	1.03	7010	SHP02-02.2301003-012		5	/	12	7	0.128	0.225	0.26	0.252	0.281	0.63	95% KM Chebyshev UCL	0.63	UCL95
7439-95-4	Magnesium	mg/kg	17,600	53,400	7010	SHP02-02.2301003-012		12	/	12	0	10.8	18.7	37,127	10,068	40,400	42,629	95% Student's-t UCL	42,629	UCL95
7439-96-5	Manganese	mg/kg	15.6	288	7010	SHP02-02.2301003-012		12	/	12	0	0.255	0.44	108.7	98.59	78.7	162.6	95% Student's-t UCL	162.6	UCL95
7439-97-6	Mercury	mg/kg	ND	ND	---	---		0	/	12	12	0.00991	0.0191	---	---	---	---	---	---	---
7440-09-7	Potassium	mg/kg	2,320	6,800	7010	SHP02-02.2301003-012		12	/	12	0	8.15	227	4,433	1,338	4,490	5,164	95% Student's-t UCL	5,164	UCL95
7782-49-2	Selenium	mg/kg	19.2	34.7	7000	SHP02-02.2301003-002		12	/	12	0	0.46	0.81	26.67	4.611	26.6	29.19	95% Student's-t UCL	29.19	UCL95
7440-23-5	Sodium	mg/kg	122,000	244,000	7000	SHP02-02.2301003-002		12	/	12	0	89.2	154	173,273	40,147	165,000	195,212	95% Student's-t UCL	195,212	UCL95
7440-24-6	Strontium	mg/kg	92.7	1,280	7002	SHP02-02.2301003-004		12	/	12	0	0.127	3.55	517	402.4	445	736.9	95% Student's-t UCL	736.9	UCL95
7440-61-1	Uranium	mg/kg	17.3	50.6	7009	SHP02-02.2301003-011		12	/	12	0	0.0169	0.0297	33.18	10.58	32.7	38.96	95% Student's-t UCL	38.96	UCL95
7440-66-6	Zinc	mg/kg	1.06	21.5	7010	SHP02-02.2301003-012		12	/	12	0	0.51	0.88	7.206	6.374	5.05	10.69	95% Student's-t UCL	10.69	UCL95
General Chemistry Parameters																				
16887-00-6	Chloride	mg/kg	11,200	51,400	7005	SHP02-02.2301003-007		12	/	12	0	559	15800	29,909	11,393	32,200	36,135	95% Student's-t UCL	36135	UCL95
NITRATE AS N	Nitrate as Nitrogen	mg/kg	7,410	26,400	7005	SHP02-02.2301003-007		12	/	12	0	256	7240	15,909	4,837	16,100	18,553	95% Student's-t UCL	18,553	UCL95
14797-65-0	Nitrite	mg/kg	ND	ND	---	---		0	/	12	12	22.8	72.3	---	---	---	---	---	---	---
PH	pH	s.u.	7.16	8.41	7002	SHP02-02.2301003-004		12	/	12	0	0.01	0.01	7.633	0.4	7.48	NA	NA	NA	NA
14808-79-8	Sulfate	mg/kg	230,000	590,000	7009	SHP02-02.2301003-011		12	/	12	0	18300	32400	466,182	106,479	495,000	524,370	95% Student's-t UCL	524,370	UCL95
Hazardous Waste Characteristics Parameters																				
7440-38-2	TCLP Arsenic	mg/L	ND	ND	---	---		0	/	12	12	0.05	0.05	---	---	---	---	---	---	---
7440-39-3	TCLP Barium	mg/L	0.0234	0.0767	7002	SHP02-02.2301003-004		12	/	12	0	0.01	0.01	0.0478	0.019	0.0489	0.0582	95% Student's-t UCL	0.0582	UCL95
7440-43-9	TCLP Cadmium	mg/L	0.0123	0.0123	7010	SHP02-02.2301003-012		1	/	12	11	0.01	0.01	---	---	---	---	---	0.0123	Maximum
7440-47-3	TCLP Chromium	mg/L	0.0115	0.0149	7002	SHP02-02.2301003-004		4	/	12	8	0.01	0.01	0.011	0.00168	0.013	0.0122	95% KM Adjusted Gamma UCL	0.0122	UCL95
7439-92-1	TCLP Lead	mg/L	ND	ND	---	---		0	/	12	12	0.033	0.033	---	---	---	---	---	---	---
7439-97-6	TCLP Mercury	mg/L	ND	ND	---	---		0	/	12	12	0.00067	0.00067	---	---	---	---	---	---	---
7782-49-2	TCLP Selenium	mg/L	0.682	1.75	7008	SHP02-02.2301003-010		12	/	12	0	0.06	0.06	1.045	0.371	0.964	1.248	95% Student's-t UCL	1.248	UCL95
7440-22-4	TCLP Silver	mg/L	0.01	0.0202	7002	SHP02-02.2301003-004		10	/	12	2	0.01	0.01	0.0137	0.0029	0.0138	0.0153	95% KM (t) UCL	0.0153	UCL95

^a A field duplicate pair was collected from sample location 7006. Both the parent sample and duplicate results are counted individually when determining ranges of detections, locations of maximum detection and frequencies of detection. However, the duplicate pair is reduced to a single set of results for calculations of the mean, standard deviation, median, and UCL95 as follows:

- When both the parent and duplicate are detections, the higher result is used.
- When one result is reported to be a detection and the other result is a nondetect, the detected result is used.
- When both the parent and duplicate are nondetects, the result with the lower detection limit is used.

^b For data sets with detects and nondetects, the mean, standard deviation and UCL95 calculations incorporate the both detect and nondetect results.

^c For data sets with detects and nondetects, the medians are calculated based on detects.

^d The EPC is calculated as the lesser of the UCL95 and the maximum detected result for data sets with a minimum of eight samples and at least four detections. Otherwise, the maximum is selected as the EPC.

"---" Indicates that the statistic is not calculated based on the detects and/or nondetects in the dataset. Also indicates information is not reported.

NA - Statistic calculation for parameter is not applicable to the HHRA.

ND - Analyte was not detected in any samples collected.

Table D-1-3. Groundwater Evaporation Pond Surface Water Analytical Data, 2016 to 2022

Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Units	1215					1215					1215					1215					1215					1215				
			1215-0-20160323-N001/N001-B					1215-0-20160928-0001					1215-0-20160928-N002					1215-0-20160928-N002					SHP02-01.1709001-071					SHP02-01.1803002-071				
			3/23/2016					9/28/2016					9/28/2016					3/28/2017					9/28/2017					3/22/2018				
Result	IQ	LQ	MDL	RL	Result	IQ	LQ	MDL	RL	Result	IQ	LQ	MDL	RL	Result	IQ	LQ	MDL	RL	Result	IQ	LQ	MDL	RL	Result	IQ	LQ	MDL	RL			
Radionuclides																																
14274-82-9	Thorium-228	pCi/L																														
14269-63-7	Thorium-230	pCi/L																														
TH-232	Thorium-232	pCi/L																														
11-08-5	Uranium-233/234	pCi/L																														
U-235+236	Uranium-235/236	pCi/L																														
U-238	Uranium-238	pCi/L																														
Metals																																
7429-90-5	Aluminum	mg/L																														
7440-38-2	Arsenic	mg/L						0.0035			0.00012																					
7440-39-3	Barium	mg/L						0.067			0.00013																					
7440-41-7	Beryllium	mg/L																														
7440-42-8	Boron	mg/L																														
7440-43-9	Cadmium	mg/L						0.00032		J	0.000055																					
7440-70-2	Calcium	mg/L	480			0.24		500			0.12					492			0.05		610			12	100.00	820			1.2	10.00		
7440-47-3	Chromium	mg/L																														
7440-50-8	Copper	mg/L																														
7439-89-6	Iron	mg/L																														
7439-92-1	Lead	mg/L						0.00055	U	J	0.00013																					
7439-95-4	Magnesium	mg/L	4400			0.3		8400			1.3					4910			5.5		11000			9.7	100.00	16000			4.9	50.00		
7439-96-5	Manganese	mg/L	0.75			0.0024		0.3			0.0011					0.472		B	0.1		0.15		U	0.15	1.00	0.3		0.015	0.10			
7439-97-6	Mercury	mg/L																														
7440-02-0	Nickel	mg/L																														
7440-09-7	Potassium	mg/L	350			0.52		1100			1.1					359			2.5		790			15	100.00	1200			1.5	10.00		
7782-49-2	Selenium	mg/L	2			0.00066		4.7	J	E	0.00066					2.47			0.2		5.4			0.0018	0.10	5.8		0.0018	0.10			
7440-22-4	Silver	mg/L																														
7440-23-5	Sodium	mg/L	11000			2.3		18000			6.6					12400			5		25000			11	100.00	22000			5.4	50.00		
7440-24-6	Strontium	mg/L	11			0.0026		15			0.00078					11.5			0.05		18			0.26	1.00	20		0.026	0.10			
7440-28-0	Thallium	mg/L																														
7440-61-1	Uranium	mg/L	2.6			0.00012		4.9			0.00012					3.07			0.0067		6.5			0.00022	0.0010	7.9		0.00022	0.0010			
7440-66-6	Zinc	mg/L																														
General Chemistry/Field Measuremnts																																
ALK-PHNPHTH	Alkalinity, Phenolphthalein (As CaCO3)	mg/L																														
ALKALINITY	Alkalinity, Total (As CaCO3)	mg/L	630					866								624					720					1009.259						
NH3+NH4-N	Ammonia Total as N	mg/L	27			2.5		15			2.5					15.8			0.425		8.3			0.3	1.00	14			0.3	1.00		
7664-41-7	Ammonia Un-ionized as NH3	mg/L																														
16887-00-6	Chloride	mg/L	2500			400		3600			400					2160			33.5		3000			600	2000.00	5500			60	200.00		
7782-44-7	Dissolved Oxygen	mg/L						4.89																								
16984-48-8	Fluoride	mg/L																														
HARD-CACO3	Hardness As CaCO3	mg/L																														
NO3+NO2 AS N	Nitrate + Nitrite as Nitrogen	mg/L	1400			50		2100			50					1490			17		3600			12	40.00	5400			12	40.00		
ORP	Oxidation Reduction Potential	mV	210.7					262.9								252					260.9					229.1						
PH	pH	s.u.	8.34	J				8.18								8.07					8.43					8.08						
EC	Specific Conductance	umhos/cm	44119					70862								50665					81622					82643						
14808-79-8	Sulfate	mg/L	40000			1000		70000			1000					40600			665		65000			1500	10000.00	84000			150	1000.00		
TMP	Temperature	C	9.6					24								11.6					25.04					11.97						
10-33-3	Total Dissolved Solids	mg/L						130000			2000																					
CL-RESID	Total Residual Chlorine	mg/L	0.04					0.06																								
TSS	Total Suspended Solids	mg/L																														
10-08-02	Turbidity	NTU	9.55					11.2								8.17					13.8					7.22						
Other Parameters																																
67-56-1	Methanol	ug/L																														
7631-86-9	Silica	mg/L																														
7440-21-3	Silicon	mg/L																														
SO4_O18/O16	Stable isotope ratio O18/O16 in Sulfate	parts/thousand																														
SO4_S34/S32	Stable isotope ratio S-34/S-32 in Sulfate	parts/thousand						-4.63						1.87																		

Acronyms:

- IQ - Interpreted qualifier
- LQ - Laboratory qualifier
- MDL - Method detection limit
- RL - Reporting limit

Data Qualifier Definitions:

- * - Replicate analysis not within control limits.
- B - Inorganic: Result is between the IDL and CRDL.
- E - Inorganic: Estimate value because of interference, see case narrative.
- H - Holding time expired, value suspect.
- J - Estimated value.
- N - Inorganic or radiochemical: Spike sample recovery not within control limits.
- U - Analytical result below detection limit.

Table D-1-4. Groundwater Evaporation Pond Surface Water Statistical Data Summary, 2016 to 2022
Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Units	Range of Detections ^a		Location of Maximum Detection ^a		Detection Frequency ^a			Number of Nondetects ^a	Range of MDLs ^a		Mean ^b	Standard Deviation ^b	Median ^c	EPC Calculations for HHRA			
																UCL95 ^b	UCL Statistical Basis	EPC ^d	EPC Basis
			Minimum	Maximum	Location ID	Sample ID					Minimum	Maximum							
Radionuclides																			
14274-82-9	Thorium-228	pCi/L	ND	ND	---	---	0	/	2	2	---	---	---	---	---	---	---	---	---
14269-63-7	Thorium-230	pCi/L	ND	ND	---	---	0	/	2	2	---	---	---	---	---	---	---	---	100% Nondetects
TH-232	Thorium-232	pCi/L	2.03	2.03	1342	SHP02-02.1712001-001	1	/	2	1	---	---	---	---	---	---	Not calculated due to only 2 samples	2.03	Detected Concentration
11-08-5	Uranium-233/234	pCi/L	2,410	2,460	1342	SHP02-02.1712001-001	2	/	2	0	---	---	2,435	---	2,435	---	Not calculated due to only 2 samples	2,460	Maximum (<8 samples)
U-235+236	Uranium-235/236	pCi/L	135	163	1342	SHP02-02.1712001-001	2	/	2	0	---	---	149	---	149	---	Not calculated due to only 2 samples	163	Maximum (<8 samples)
U-238	Uranium-238	pCi/L	2,070	2,200	1342	SHP02-02.1712001-001	2	/	2	0	---	---	2,135	---	2,135	---	Not calculated due to only 2 samples	2,200	Maximum (<8 samples)
Metals																			
7429-90-5	Aluminum	mg/L	ND	ND	---	---	0	/	5	5	0.068	6.8	---	---	---	---	---	---	100% Nondetects
7440-38-2	Arsenic	mg/L	0.0035	0.25	1343	SHP02-02.1712001-002	3	/	6	3	0.00012	0.05	0.0807	0.109	0.22	0.191	95% KM (t) UCL	0.25	Maximum (<8 samples)
7440-39-3	Barium	mg/L	0.067	0.121	1342 / 1343	SHP02-02.1807002-001 / SHP02-02.1807002-002	6	/	6	0	0.00013	0.0168	0.0992	0.0244	0.104	0.119	95% Student's-t UCL	0.121	Maximum (<8 samples)
7440-41-7	Beryllium	mg/L	ND	ND	---	---	0	/	5	5	0.001	0.1	---	---	---	---	---	---	100% Nondetects
7440-42-8	Boron	mg/L	6.45	23.7	1342	SHP02-02.1807002-001	5	/	5	0	0.015	1.5	16.29	8.981	22.3	24.85	95% Student's-t UCL	23.7	Maximum (<8 samples)
7440-43-9	Cadmium	mg/L	0.00032	0.00032	1215	1215-0-20160928-0001	1	/	6	5	0.000055	0.0075	---	---	---	---	Not calculated due to only 1 detection	0.00032	Detected Concentration
7440-70-2	Calcium	mg/L	102	820	1215	SHP02-01.1803002-071	15	/	15	0	0.05	12	415.5	219.8	480	515.5	95% Student's-t UCL	515.5	UCL95
7440-47-3	Chromium	mg/L	ND	ND	---	---	0	/	5	5	0.003	0.075	---	---	---	---	---	---	100% Nondetects
7440-50-8	Copper	mg/L	0.0034	0.004	1343	SHP02-02.1712001-002	2	/	5	3	0.0003	0.0075	0.0037	0.0003	0.0037	---	Not calculated due to only 2 detections	0.004	Maximum (<8 samples)
7439-89-6	Iron	mg/L	9.1	9.1	1215	SHP02-01.2203007-074	1	/	7	6	0.03	4.4	---	---	---	---	Not calculated due to only 1 detection	9.1	Detected Concentration
7439-92-1	Lead	mg/L	ND	ND	---	---	0	/	6	6	0.00013	0.0125	---	---	---	---	---	---	100% Nondetects
7439-95-4	Magnesium	mg/L	808	33,500	1343	SHP02-02.1807002-002	15	/	15	0	0.11	18	14,955	10,296	11,600	19,637	95% Student's-t UCL	19,637	UCL95
7439-96-5	Manganese	mg/L	0.0161	8.5	1215	SHP02-01.2203007-074	14	/	15	1	0.001	0.15	1.051	2.027	0.536	3.418	95% KM Chebyshev UCL	3.418	UCL95
7439-97-6	Mercury	mg/L	ND	ND	---	---	0	/	2	2	0.000067	0.000067	---	---	---	---	---	---	100% Nondetects
7440-02-0	Nickel	mg/L	0.0231	0.0726	1342	SHP02-02.1807002-001	5	/	5	0	0.0006	0.015	0.051	0.0248	0.0653	0.0746	95% Student's-t UCL	0.0726	Maximum (<8 samples)
7440-09-7	Potassium	mg/L	143	7,300	1215	SHP02-01.1809003-071	15	/	15	0	0.05	33	1,904	1,842	1,200	3,206	95% Adjusted Gamma UCL	3,206	UCL95

7782-49-2	Selenium	mg/L	0.704	22	1215	SHP02-01.1809003-071	12	/	12	0	0.00066	0.2	7.045	6.028	5.545	12.2	95% Adjusted Gamma UCL	12.2	UCL95
7440-22-4	Silver	mg/L	ND	ND	---	---	0	/	5	5	0.0003	0.0075	---	---	---	---	---	---	100% Nondetects
7440-23-5	Sodium	mg/L	1,950	80,300	1343	SHP02-02.1807002-002	15	/	15	0	0.1	76	35,103	27,358	22,000	47,545	95% Student's-t UCL	47,545	UCL95
7440-24-6	Strontium	mg/L	1.79	20.2	1343	SHP02-02.1807002-002	15	/	15	0	0.00078	0.26	14.71	4.85	16.1	16.92	95% Student's-t UCL	16.92	UCL95
7440-28-0	Thallium	mg/L	0.0138	0.0382	1343	SHP02-02.1807002-002	5	/	5	0	0.0006	0.015	0.0279	0.0124	0.0358	0.0398	95% Student's-t UCL	0.0382	Maximum (<8 samples)
7440-61-1	Uranium	mg/L	0.874	31	1215	SHP02-01.1809003-071	15	/	15	0	0.000049	0.0168	11.5	8.742	8	15.88	95% Student's-t UCL	15.88	UCL95
7440-66-6	Zinc	mg/L	0.0298	0.246	1342	SHP02-02.1807002-003	5	/	5	0	0.0033	0.0825	0.119	0.0854	0.115	0.201	95% Student's-t UCL	0.246	Maximum (<8 samples)
General Chemistry/Field Measurments																			
NH3+NH4-N	Ammonia Total as N	mg/L	8.3	55.5	1342	SHP02-02.1807002-001	13	/	13	0	0.3	2.5	22.5	13.02	18	28.94	95% Student's-t UCL	28.94	UCL95
7664-41-7	Ammonia Un-ionized as NH3	mg/L	8.15	10	1342	SHP02-02.1712001-001	2	/	2	0	0.017	0.017	9.075	---	9.075	---	Not calculated due to only 2 samples	10	Maximum (<8 samples)
16887-00-6	Chloride	mg/L	711	37,000	1215	SHP02-01.1809003-071	15	/	15	0	0.067	1340	10,217	9,720	5,500	14,637	95% Adjusted Gamma UCL	14,637	UCL95
16984-48-8	Fluoride	mg/L	6.85	24.2	1342	SHP02-02.1807002-001	5	/	5	0	0.033	3.3	12.31	7.03	11.3	19.01	95% Student's-t UCL	24.2	Maximum (<8 samples)
NO3+NO2 AS N	Nitrate + Nitrite as Nitrogen	mg/L	493	19,000	1215	SHP02-01.1809003-071	15	/	15	0	0.017	850	5,968	4,960	4,000	8,224	95% Student's-t UCL	8,224	UCL95
PH	pH	s.u.	7.21	8.52	1215	SHP02-01.2203007-074	15	/	15	0	0	0	7.98	0.46	8.08	NA	NA	NA	NA
14808-79-8	Sulfate	mg/L	5,340	284,000	1343	SHP02-02.1807002-002	15	/	15	0	0.133	2,660	117,363	91,842	77,300	159,129	95% Student's-t UCL	159,129	UCL95
CL-RESID	Total Residual Chlorine	mg/L	0.04	0.06	1215	1215-0-20160928-0001	2	/	2	0	0	0	0.05	---	0.05	---	Not calculated due to only 2 samples	0.06	Maximum (<8 samples)
Other Parameters																			
67-56-1	Methanol	ug/L	ND	ND	---	---	0	/	2	2	200	200	---	---	---	---	---	---	100% Nondetects
7631-86-9	Silica	mg/L	56.7	93.7	1342	SHP02-02.1807002-001	5	/	5	0	0.053	5.3	77	18.09	86.3	94.25	95% Student's-t UCL	93.7	Maximum (<8 samples)

^a A field duplicate pair was collected from sample location 1215. Both the parent sample and duplicate results are counted individually when determining ranges of detections, locations of maximum detection and frequencies of detection. Because of the fluid nature of the medium, the duplicate results were incorporated into the calcuations of the means, standard deviations, median, UCL95 values, and EPCs.

^b For data sets with detects and nondetects, the mean, standard deviation and UCL95 calculations incorporate the both detect and nondetect results.

^c For data sets with detects and nondetects, the medians are calculated based on detects.

^d The EPC is calculated as the lesser of the UCL95 and the maximum detected result for data sets with a minimum of eight samples and at least four detections. Otherwise, the maximum is selected as the EPC.

"---" Indicates that the statistic is not calculated based on the detects and/or nondetects in the dataset. Also indicates information is not reported.

NA - Statistic calculation for parameter is not applicable to the HHRA.

ND - Analyte was not detected in any samples collected.

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ATTACHMENT D-2

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Attachment D-2-1a. Onsite Trespasser, Sediment Screening Level Calculation Inputs, Radionuclides

Variable	Value
Cover layer thickness for GSF (gamma shielding factor) cm	Default
Site area for ACF (area correction factor) m ²	Default
TR (target cancer risk) unitless	0.000001
t _{rec} (time - recreator) yr	26
ED _{rec} (exposure duration - recreator) yr	26
ED _{rec-c} (exposure duration - recreator child) yr	6
ED _{rec-a} (exposure duration - recreator adult) yr	20
ET _{rec} (exposure time - recreator) hr/day	1
ET _{rec-c} (exposure time - recreator) hr/day	1
ET _{rec-a} (exposure time - recreator) hr/day	1
EF _{rec} (exposure frequency - recreator) day/yr	75
EF _{rec-c} (exposure frequency - recreator child) day/yr	75
EF _{rec-a} (exposure frequency - recreator adult) day/yr	75
IFS _{rec-adj} (age-adjusted soil intake rate - recreator) mg	240000
IRS _{rec-c} (soil intake rate - recreator child) mg/day	200
IRS _{rec-a} (soil intake rate - recreator adult) mg/day	100
IFA _{rec-adj} (age-adjusted inhalation rate - recreator) m ³	1437.5
IRA _{rec-c} (inhalation rate - recreator child) m ³ /day	10
IRA _{rec-a} (inhalation rate - recreator adult) m ³ /day	20
A _s (acres)	0.5
Q/C _{wind} (g/m ² -s per kg/m ³)	93.77
PEF (particulate emission factor) n ³ /kg	1359344438
A (PEF Dispersion Constant)	16.2302
B (PEF Dispersion Constant)	18.7762
C (PEF Dispersion Constant)	216.108
V (fraction of vegetative cover) unitless	0.5
U _m (mean annual wind speed) m/s	4.69
U _t (equivalent threshold value)	11.32
F(x) (function dependent on U _m /U _t) unitless	0.194

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Attachment D-2-1b. Onsite Trespasser, Sediment Screening Level Calculations, Radionuclides

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Soil Ingestion Slope Factor (risk/pCi)	Particulate Emission Factor (m³/kg)	Lambda (1/yr)	Halflife (yr)	Default Soil Volume Area Correction Factor	Default Soil Volume Gamma Shielding Factor	Ingestion PRG TR=1E-06 (pCi/g)	Inhalation PRG TR=1E-06 (pCi/g)	External Exposure PRG TR=1E-06 (pCi/g)	Total PRG TR=1E-06 (pCi/g)
U-234	S	2.78E-08	2.53E-10	1.48E-10	1.36E+09	2.82E-06	2.46E+05	1.00E+00	1.00E+00	2.81E+01	3.40E+04	1.77E+04	2.80E+01
U-235	S	2.50E-08	5.51E-07	1.48E-10	1.36E+09	9.84E-10	7.04E+08	1.00E+00	1.00E+00	2.82E+01	3.78E+04	8.15E+00	6.32E+00
U-238	S	2.36E-08	1.24E-10	1.34E-10	1.36E+09	1.55E-10	4.47E+09	1.00E+00	1.00E+00	3.10E+01	4.00E+04	3.63E+04	3.10E+01

**Attachment D-2-2a. Onsite Trespasser, Sediment Screening Level
Calculation Inputs, Chemicals**

Variable	Value
ED _{rec} (exposure duration - recreator) years	26
ED _{rec-c} (exposure duration - child) years	6
BW _{rec-a} (body weight - adult) kg	80
BW _{rec-c} (body weight - child) kg	15
SA _{rec-a} (skin surface area - adult) cm ² /day	6032
SA _{rec-c} (skin surface area - child) cm ² /day	2373
THQ (target hazard quotient) unitless	0.1
TR (target risk) unitless	0.000001
LT (lifetime - recreator) years	70
IRS _{rec-a} (soil intake rate - adult) mg/day	100
IRS _{rec-c} (soil intake rate - child) mg/day	200
AF _{rec-a} (skin adherence factor - adult) mg/cm ²	0.07
AF _{rec-c} (skin adherence factor - child) mg/cm ²	0.2
IFS _{rec-adj} (age-adjusted soil ingestion factor) mg/kg	7875
DFS _{rec-adj} (age-adjusted soil dermal factor) mg/kg	22155
IFSM _{rec-adj} (mutagenic age-adjusted soil ingestion factor) mg/kg	35750
DFSM _{rec-adj} (mutagenic age-adjusted soil dermal factor) mg/kg	91770
AF ₀₋₂ (skin adherence factor) mg/cm ²	0.2
AF ₂₋₆ (skin adherence factor) mg/cm ²	0.2
AF ₆₋₁₆ (skin adherence factor) mg/cm ²	0.07
AF ₁₆₋₃₀ (skin adherence factor) mg/cm ²	0.07
BW ₀₋₂ (body weight) kg	15
BW ₂₋₆ (body weight) kg	15
BW ₆₋₁₆ (body weight) kg	80
BW ₁₆₋₃₀ (body weight) kg	80
ED ₀₋₂ (exposure duration) year	2
ED ₂₋₆ (exposure duration) year	4
ED ₆₋₁₆ (exposure duration) year	10
ED ₁₆₋₃₀ (exposure duration) year	10
EF _{rec} (exposure frequency) days/year	75
EF _{rec-c} (exposure frequency - child) days/year	75
EF _{rec-a} (exposure frequency - adult) days/year	75
EF ₀₋₂ (exposure frequency) days/year	75
EF ₂₋₆ (exposure frequency) days/year	75
EF ₆₋₁₆ (exposure frequency) days/year	75
EF ₁₆₋₃₀ (exposure frequency) days/year	75
ET _{rec} (exposure time - recreator) hours/day	1
ET _{rec-c} (child exposure time) hours/day	1
ET _{rec-a} (adult exposure time) hours/day	1
ET ₀₋₂ (exposure time) hours/day	1
ET ₂₋₆ (exposure time) hours/day	1
ET ₆₋₁₆ (exposure time) hours/day	1
ET ₁₆₋₃₀ (exposure time) hours/day	1
IRS ₀₋₂ (soil intake rate) mg/day	200
IRS ₂₋₆ (soil intake rate) mg/day	200
IRS ₆₋₁₆ (soil intake rate) mg/day	100
IRS ₁₆₋₃₀ (soil intake rate) mg/day	100
SA ₀₋₂ (skin surface area) cm ² /day	2373
SA ₂₋₆ (skin surface area) cm ² /day	2373
SA ₆₋₁₆ (skin surface area) cm ² /day	6032
SA ₁₆₋₃₀ (skin surface area) cm ² /day	6032
AT _{rec} (averaging time)	365
City (PEF Climate Zone) Selection	Default
A _e (PEF acres)	0.5
Q/C _{wind} (g/m ² -s per kg/m ³)	93.77
PEF (particulate emission factor) m ³ /kg	1359344438
A (PEF Dispersion Constant)	16.2302
B (PEF Dispersion Constant)	18.7762
C (PEF Dispersion Constant)	216.108
V (fraction of vegetative cover) unitless	0.5
U _m (mean annual wind speed) m/s	4.69
U _t (equivalent threshold value)	11.32
F(x) (function dependent on U _t /U _i) unitless	0.194
City (VF Climate Zone) Selection	Default
A _e (VF acres)	0.5
Q/C _{vol} (g/m ² -s per kg/m ³)	68.18
foc (fraction organic carbon in soil) g/g	0.006
p _b (dry soil bulk density) g/cm ³	1.5
p _s (soil particle density) g/cm ³	2.65
n (total soil porosity) L _{poral} /L _{soil}	0.43396
Theta _a (air-filled soil porosity) L _{air} /L _{soil}	0.28396
Theta _w (water-filled soil porosity) L _{water} /L _{soil}	0.15
T (exposure interval) s	819936000
A (VF Dispersion Constant)	11.911
B (VF Dispersion Constant)	18.4385
C (VF Dispersion Constant)	209.7845
T _w (groundwater temperature) Celsius	25

Attachment D-2-2b. Onsite Trespasser, Sediment Screening Level Calculations, Chemicals

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TE

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	RfC (mg/m ³)	RfC Ref	SF _o (mg/kg-day) ⁻¹	SF _o Ref	IUR (ug/m ³) ⁻¹	IUR Ref	ABS _{derm}	ABS _{gi}	Volatilization Factor Unlimited Reservoir (m ³ /kg)	Volatilization Factor Mass Limit (m ³ /kg)	Volatilization Factor Selected (m ³ /kg)	K _d (cm ³ /g)	K _{oc} (cm ³ /g)	Particulate Emission Factor (m ³ /kg)	DA	Soil Saturation Concentration (mg/kg)	Solubility (mg/L)	RBA	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)
Arsenic, Inorganic	7440-38-2	No	No	3.00E-04	IC	1.50E-05	C	1.50E+00	IC	4.30E-03	IC	3.00E-02	1.00E+00	-	-	-	2.90E+01	-	1.36E+09	-	-	-	6.00E-01	-	-
Barium	7440-39-3	No	No	2.00E-01	IC	5.00E-04	HC	-		-		-	7.00E-02	-	-	-	4.10E+01	-	1.36E+09	-	-	-	1.00E+00	-	-
Cadmium (Diet)	7440-43-9	No	No	1.00E-04	AF	1.00E-05	AF	-		1.80E-03	IC	1.00E-03	2.50E-02	-	-	-	7.50E+01	-	1.36E+09	-	-	-	1.00E+00	-	-
Calcium	7440-70-2	No	No	-		-		-		-		-	1.00E+00	-	-	-	-	-	1.36E+09	-	-	-	1.00E+00	-	-
Chloride	16887-00-6	No	No	-		-		-		-		-	1.00E+00	-	-	-	-	-	1.36E+09	-	-	-	1.00E+00	-	-
Lead and Compounds	7439-92-1	No	No	-		-		8.50E-03	C	1.20E-05	C	-	1.00E+00	-	-	-	9.00E+02	-	1.36E+09	-	-	-	1.00E+00	-	-
Magnesium	7439-95-4	No	No	-		-		-		-		-	1.00E+00	-	-	-	4.50E+00	-	1.36E+09	-	-	-	1.00E+00	-	-
Manganese (Non-diet)	7439-96-5	No	No	2.40E-02	S	5.00E-05	IC	-		-		-	4.00E-02	-	-	-	6.50E+01	-	1.36E+09	-	-	-	1.00E+00	-	-
Mercuric Chloride	7487-94-7	No	No	3.00E-04	IC	3.00E-04	S	-		-		-	7.00E-02	-	-	-	-	-	1.36E+09	-	-	6.90E+04	1.00E+00	-	-
Mercury (elemental)	7439-97-6	No	Yes	1.60E-04	C	3.00E-04	IC	-		-		-	1.00E+00	3.47E+04	-	3.47E+04	5.20E+01	-	1.36E+09	1.10E-05	3.13E+00	6.00E-02	1.00E+00	8.62E-03	3.52E-01
Nitrate (measured as nitrogen)	14797-55-8	No	No	1.60E+00	IC	-		-		-		-	1.00E+00	-	-	-	-	-	1.36E+09	-	-	-	1.00E+00	-	-
Nitrite (measured as nitrogen)	14797-65-0	No	No	1.00E-01	IC	-		-		-		-	1.00E+00	-	-	-	-	-	1.36E+09	-	-	-	1.00E+00	-	-
Potassium	7440-09-7	No	No	-		-		-		-		-	1.00E+00	-	-	-	5.50E+00	-	1.36E+09	-	-	-	1.00E+00	-	-
Selenium	7782-49-2	No	No	5.00E-03	IC	2.00E-02	C	-		-		-	1.00E+00	-	-	-	5.00E+00	-	1.36E+09	-	-	-	1.00E+00	-	-
Sodium	7440-23-5	No	No	-		-		-		-		-	1.00E+00	-	-	-	1.00E+02	-	1.36E+09	-	-	-	1.00E+00	-	-
Strontium, Stable	7440-24-6	No	No	6.00E-01	IC	-		-		-		-	1.00E+00	-	-	-	3.50E+01	-	1.36E+09	-	-	-	1.00E+00	-	-
Sulfate	14808-79-8	No	No	-		-		-		-		-	1.00E+00	-	-	-	-	-	1.36E+09	-	-	1.00E+06	1.00E+00	-	-
Uranium (Soluble Salts)	7440-61-1	No	No	2.00E-04	AF	4.00E-05	AF	-		-		-	1.00E+00	-	-	-	4.50E+02	-	1.36E+09	-	-	-	1.00E+00	-	-
Zinc and Compounds	7440-66-6	No	No	3.00E-01	IC	-		-		-		-	1.00E+00	-	-	-	6.20E+01	-	1.36E+09	-	-	-	1.00E+00	-	-

̄ applied; E = RPF applied; SU = Sur

H ⁺ and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T _c (K)	T _c Ref	D _{ia} (cm ² /s)	D _{iw} (cm ² /s)	Ingestion PRG TR=1E-06 (mg/kg)	Dermal PRG TR=1E-06 (mg/kg)	Inhalation PRG TR=1E-06 (mg/kg)	Carcinogenic PRG TR=1E-06 (mg/kg)	Child Ingestion PRG HQ=0.1 (mg/kg)	Child Dermal PRG HQ=0.1 (mg/kg)	Child Inhalation PRG HQ=0.1 (mg/kg)	Noncarcinogenic Child PRG HI=0.1 (mg/kg)	Adult Ingestion PRG HQ=0.1 (mg/kg)	Adult Dermal PRG HQ=0.1 (mg/kg)	Adult Inhalation PRG HQ=0.1 (mg/kg)	Noncarcinogenic Adult PRG HI=0.1 (mg/kg)	Adjusted Ingestion PRG HQ=0.1 (mg/kg)	Adjusted Dermal PRG HQ=0.1 (mg/kg)	Adjusted Inhalation PRG HQ=0.1 (mg/kg)	Noncarcinogenic Adjusted PRG HI=0.1 (mg/kg)
	-	8.88E+02	PHYSPROP	1.67E+03	CRC	-	-	3.60E+00	2.56E+01	9.94E+04	3.16E+00	1.83E+01	1.54E+02	2.38E+05	1.63E+01	1.95E+02	9.22E+02	2.38E+05	1.61E+02	6.03E+01	4.28E+02	2.38E+05	5.28E+01
	-	1.87E+03	PHYSPROP	3.57E+03	YAWS	-	-	-	-	-	-	7.30E+03	-	7.94E+06	7.29E+03	7.79E+04	-	7.94E+06	7.71E+04	2.41E+04	-	7.94E+06	2.40E+04
	-	1.04E+03	PHYSPROP	2.29E+03	YAWS	-	-	-	-	2.37E+05	2.37E+05	3.65E+00	3.85E+01	1.59E+05	3.33E+00	3.89E+01	2.31E+02	1.59E+05	3.33E+01	1.21E+01	1.07E+02	1.59E+05	1.08E+01
	-	1.71E+03	PHYSPROP	3.27E+03	YAWS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	2.02E+03	CRC	5.40E+03	YAWS	-	-	3.82E+02	-	3.56E+07	3.82E+02	-	-	-	-	-	-	-	-	-	-	-	-
	-	1.37E+03	PHYSPROP	2.24E+03	YAWS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	2.37E+03	PHYSPROP	4.33E+03	CRC	-	-	-	-	-	-	8.76E+02	-	7.94E+05	8.75E+02	9.34E+03	-	7.94E+05	9.24E+03	2.89E+03	-	7.94E+05	2.88E+03
	-	5.77E+02	CRC	9.73E+02	CRC	-	-	-	-	-	-	1.10E+01	-	4.76E+06	1.09E+01	1.17E+02	-	4.76E+06	1.17E+02	3.62E+01	-	4.76E+06	3.62E+01
PHYSPROP VP/S	3.52E-01	6.30E+02	PHYSPROP	1.76E+03	CRC	3.07E-02	6.30E-06	-	-	-	-	5.84E+00	-	1.22E+02	5.57E+00	6.23E+01	-	1.22E+02	4.12E+01	1.93E+01	-	1.22E+02	1.66E+01
	-	-		-		-	-	-	-	-	-	5.84E+04	-	-	5.84E+04	6.23E+05	-	-	6.23E+05	1.93E+05	-	-	1.93E+05
	-	-		-		-	-	-	-	-	-	3.65E+03	-	-	3.65E+03	3.89E+04	-	-	3.89E+04	1.21E+04	-	-	1.21E+04
	-	1.60E+03	PHYSPROP	2.22E+03	YAWS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	9.58E+02	PHYSPROP	1.77E+03	CRC	-	-	-	-	-	-	1.83E+02	-	3.18E+08	1.82E+02	1.95E+03	-	3.18E+08	1.95E+03	6.03E+02	-	3.18E+08	6.03E+02
	-	1.15E+03	PHYSPROP	2.57E+03	CRC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	1.66E+03	PHYSPROP	4.27E+03	YAWS	-	-	-	-	-	-	2.19E+04	-	-	2.19E+04	2.34E+05	-	-	2.34E+05	7.23E+04	-	-	7.23E+04
	-	5.63E+02	EPI	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	4.09E+03	CRC	1.37E+04	YAWS	-	-	-	-	-	-	7.30E+00	-	6.35E+05	7.30E+00	7.79E+01	-	6.35E+05	7.79E+01	2.41E+01	-	6.35E+05	2.41E+01
	-	1.18E+03	PHYSPROP	3.17E+03	YAWS	-	-	-	-	-	-	1.10E+04	-	-	1.10E+04	1.17E+05	-	-	1.17E+05	3.62E+04	-	-	3.62E+04

Attachment D-2-3a. Pond Remediation Worker, Sediment Screening Level Calculation Inputs, Radionuclides

Variable	Site-Specific Value	Rationale
A _{c-doz} (areal extent of dozing) acres	11	Pond area.
A _{excav} (area of excavation site) m ²	44515	Pond area.
A _{c-grade} (areal extent of grading) acres	0	No grading of contaminated material assumed. Grading occurs after backfill.
A (PEF Dispersion Constant)	2.4538	Default (could not be modified).
A _{surf} (areal extent of site) m ²	44515	Pond area.
A _{till} (areal extent of tilling) acres	0	Tilling assumed after backfill.
B _{i-doz} (dozing blade length) m	3	Approx. 10 ft (3.048 m) per data call.
B _{i-grade} (grading blade length) m	0	Grading assumed after backfill.
B (PEF Dispersion Constant)	17.566	Default (could not be modified).
C (PEF Dispersion Constant)	189.0426	Default (could not be modified).
Cover layer thickness for GSF (gamma shielding factor) cm	0 cm	No shielding layer assumed during remediation. Surface sealant is destroyed.
d _{excav} (average depth of excavation site) m	0.25	0.25 m per data call.
F _D Unitless Dispersion Correction Factor	0.185837208	Default.
F(x) (function dependant on U _m /U _t derived using Cowherd et al. (1985))	0.003765285	Default.
J _r (g/m ² s)	0.001351604	Calculated.
M _{doz} (dust emitted from dozing operations) g	4712.435258	Calculated.
M _{excav} (dust emitted from excavation soil dumping) g	19677588.11	Calculated.
M _{m-doz} (Gravimetric soil moisture content) %	7.9	Default.
M _{m-excav} (Gravimetric soil moisture content) %	12	Default.
M _{wind} (dust emitted by wind erosion) g	1262.492683	Calculated.
N _{A-doz} (number of times site was dozed)	3	From data call.
N _{A-dump} (number of times soil is dumped)	6591 ^a	See footnote 'a' below.
N _{A-grade} (number of times site was graded)	0	Grading assumed after backfill.
N _{A-till} (number of times soil is tilled)	0	Tilling assumed after backfill.
Q/C _{sa} (g/m ² -s per kg/m ³)	8.286871601	Calculated.
p _{soil} (density) g/cm ³ - chemical-specific	2.2	Approx. density of rock salt
s _{doz} (soil silt content) %	6.9	Default.
Site area for ACF (area correction factor) m ²	50001 m ²	Selected calculator value closest to actual value.
ED _{con} (exposure duration - construction worker) yr	1	ED for construction worker always 1 yr in calculations
EF _{con} (exposure frequency - construction worker) day/yr	250	Default.
ET _{con} (exposure time - construction worker) hr/day	8	Default.
IRA _{con} (soil inhalation rate - construction worker) m ³ /day	60	Default.
IRS _{con} (soil ingestion rate - construction worker) mg/day	330	Default.
t _{con} (time - construction worker) yr	1	Default.
TR (target cancer risk) unitless	0.000001	
S _{doz} (dozing speed) kph	3.2	Estimated maximum from data call (1 to 2 mph)
S _{grade} (grading speed) kph	0	Grading assumed after backfill.
s _{till} (soil silt content) %	0	Tilling assumed after backfill.
t _c (overall duration of construction) hours	8400	Calculated.
T (time over which traffic occurs) s	7200000	Calculated.
U _m (mean annual wind speed) m/s	3.26	Calculated from 2022 meteorological data for Shiprock site cliffRouterMet station.
U _t (equivalent threshold value) m/s	11.32	Default.
VKT _{doz} (sum of fleet vehicle km traveled) km	44.517	Calculated
V (fraction of vegetative cover)	0	No vegetative cover over pond sediment.

Notes:

^a Calculation of number of times soil is dumped (NA-dump):

$$NA\text{-dump} = V_s / V_d$$

Where:

$$V_s = \text{total volume of sediment/soil removed (not including volume of liner)} (m^3) = V_t - V_l = 13182 m^3$$

Where:

$$V_t = \text{total volume of waste being removed (sediment, soil and liner)} = 19850 yd^3 = 15185 m^3$$

$$V_l = \text{volume of liner} = \text{Area (44515 m}^2\text{)} \times \text{Thickness (0.045 m)} = 2003 m^3$$

$$V_d = \text{device dumping capacity (2 m}^3\text{)}$$

Therefore,

$$NA\text{-dump} = 13182 m^3 / 2 m^3 = 6591$$

Attachment D-2-3b. Pond Remediation Worker, Sediment Screening Level Calculations, Radionuclides

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Adult Soil Ingestion Slope Factor (risk/pCi)	Particulate Emission Factor (m ³ /kg)	Lambda (1/yr)	Halflife (yr)	50001 m ² Soil Volume Area Correction Factor	0 cm Soil Volume Gamma Shielding Factor	Ingestion PRG TR=1E-06 (pCi/g)	Inhalation PRG TR=1E-06 (pCi/g)	External Exposure PRG TR=1E-06 (pCi/g)	Total PRG TR=1E-06 (pCi/g)
U-234	S	2.78E-08	2.53E-10	5.11E-11	5.70E+04	2.82E-06	2.46E+05	9.92E-01	1.00E+00	2.37E+02	4.10E-01	1.74E+04	4.09E-01
U-235	S	2.50E-08	5.51E-07	4.92E-11	5.70E+04	9.84E-10	7.04E+08	8.70E-01	1.00E+00	2.46E+02	4.56E-01	9.13E+00	4.33E-01
U-238	S	2.36E-08	1.24E-10	4.66E-11	5.70E+04	1.55E-10	4.47E+09	9.95E-01	1.00E+00	2.60E+02	4.82E-01	3.56E+04	4.81E-01

Output generated 12MAR2023:15:42:31

Mass Loading = 1.75E-02

Attachment D-2-4a. Pond Remediation Worker, Sediment Screening Level Calculation Inputs, Chemicals

Variable	Site-Specific Value	Rationale
A _{c-doz} (areal extent of dozing) acres	11	Pond area.
A _{excav} (area of excavation site) m ²	44515	Pond area.
A _{c-grade} (areal extent of grading) acres	0	No grading of contaminated material assumed. Grading occurs after backfill.
A (PEF Dispersion Constant)	2.4538	Default (could not be modified).
A _{surf} (areal extent of site) m ²	44515.46	Pond area.
A _{till} (areal extent of tilling) acres	0	Tilling assumed after backfill.
B _{l-doz} (dozing blade length) m	3	Approx. 10 ft (3.048 m) per data call.
B _{l-grade} (grading blade length) m	0	Grading assumed after backfill.
B (PEF Dispersion Constant)	17.566	Default (could not be modified).
C (PEF Dispersion Constant)	189.0426	Default (could not be modified).
d _{excav} (average depth of excavation site) m	0.25	0.25 m per data call.
F _D Unitless Dispersion Correction Factor	0.185837208	Default.
F(x) (function dependant on U _m /U _t derived using Cowherd et al. (1985))	0.003765285	Default.
J _T (g/m ² s)	3.82823E-05	Calculated.
M _{doz} (dust emitted from dozing operations) g	4712.435258	Calculated.
M _{excav} (dust emitted from excavation soil dumping) g	12263940.94	Calculated.
M _{m-doz} (Gravimetric soil moisture content) %	7.9	Default.
M _{m-excav} (Gravimetric soil moisture content) %	12	Default.
M _{wind} (dust emitted by wind erosion) g	1262.492683	Calculated.
N _{A-doz} (number of times site was dozed)	3	From data call.
N _{A-dump} (number of times soil is dumped)	6591	See footnote 'a' below.
N _{A-grade} (number of times site was graded)	0	Grading assumed after backfill.
N _{A-till} (number of times soil is tilled)	0	Tilling assumed after backfill.
Q/C _{ss} (g/m ² -s per kg/m ³)	8.286871601	Calculated.
p _{soil} (density) g/cm ³ - chemical-specific	2.2	Approx. density of rock salt
s _{doz} (soil silt content) %	6.9	Default.
AF _{con} (skin adherence factor - construction worker) mg/cm ²	0.3	
AT _{con} (averaging time - construction worker) days	365	
AT _{con-a} (averaging time - construction worker) days	365	
BW _{con} (body weight - construction worker) kg	80	
ED _{con} (exposure duration - construction worker) yr	1	ED for construction worker always 1 yr in calculations
EF _{con} (exposure frequency - construction worker) day/yr	250	Default.
ET _{con} (exposure time - construction worker) hr/day	8	Default.
THQ (target hazard quotient) unitless	0.1	
IRS _{con} (soil ingestion rate - construction worker) mg/day	330	Default.
LT (lifetime) yr	70	
SA _{con} (surface area - construction worker) cm ² /day	3527	
TR (target cancer risk) unitless	0.000001	
S _{doz} (dozing speed) kph	3.2	Estimated maximum from data call (1 to 2 mph)
S _{grade} (grading speed) kph	0	Grading assumed after backfill.
s _{till} (soil silt content) %	0	
t _c (overall duration of construction) hours	8400	Calculated.
T (time over which traffic occurs) s	7200000	Calculated.
U _m (mean annual wind speed) m/s	3.26	Calculated from 2022 meteorological data for Shiprock site cliffRouterMet station.
U _t (equivalent threshold value) m/s	11.32	Default.
VKT _{doz} (sum of fleet vehicle km traveled) km	44.517	Calculated
V (fraction of vegetative cover)	0	No vegetative cover over pond sediment.

Notes:

^a Calculation of number of times soil is dumped (NA-dump):

$$NA\text{-dump} = V_s / V_d$$

Where:

$$V_s = \text{total volume of sediment/soil removed (not including volume of liner)} (m^3) = V_t - V_l = 13182 m^3$$

Where:

$$V_t = \text{total volume of waste being removed (sediment, soil and liner)} = 19850 yd^3 = 15185 m^3$$

$$V_l = \text{volume of liner} = \text{Area (44515 m}^2\text{)} \times \text{Thickness (0.045 m)} = 2003 m^3$$

$$V_d = \text{device dumping capacity (2 m}^3\text{)}$$

Therefore,

$$NA\text{-dump} = 13182 m^3 / 2 m^3 = 6591$$

Attachment D-2-4b. Pond Remediation Worker, Sediment Screening Level Calculations, Chemicals

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = H Subchronic toxicity values will be used where available. RfC and RfD references will be followed by either 'Chronic' or 'Subchronic' to indicate which toxicity value was used.

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	RfC (mg/m ³)	RfC Ref	SF _o (mg/kg-day) ⁻¹	SF _o Ref	IUR (ug/m ³) ⁻¹	IUR Ref	ABS _{derm}	ABS _{gi}	Volatilization Factor Unlimited Reservoir (m ³ /kg)	Volatilization Factor Mass Limit (m ³ /kg)	Volatilization Factor Selected (m ³ /kg)	K _d (cm ³ /g)	K _{oc} (cm ³ /g)	Particulate Emission Factor (m ³ /kg)
Arsenic, Inorganic	7440-38-2	No	No	5.00E-03	PA/Subchronic	1.50E-05	C /Chronic	1.50E+00	IC	4.30E-03	IC	3.00E-02	1.00E+00	-	-	-	2.90E+01	-	1.16E+06
Barium	7440-39-3	No	No	2.00E-01	AF/Subchronic	5.00E-03	HC/Subchronic	-		-		-	7.00E-02	-	-	-	4.10E+01	-	1.16E+06
Cadmium (Diet)	7440-43-9	No	No	5.00E-04	AF/Subchronic	9.00E-04	PA/Subchronic	-		1.80E-03	IC	1.00E-03	2.50E-02	-	-	-	7.50E+01	-	1.16E+06
Calcium	7440-70-2	No	No	-		-		-		-		-	1.00E+00	-	-	-	-	-	1.16E+06
Chloride	16887-00-6	No	No	-		-		-		-		-	1.00E+00	-	-	-	-	-	1.16E+06
Lead and Compounds	7439-92-1	No	No	-		-		8.50E-03	C	1.20E-05	C	-	1.00E+00	-	-	-	9.00E+02	-	1.16E+06
Magnesium	7439-95-4	No	No	-		-		-		-		-	1.00E+00	-	-	-	4.50E+00	-	1.16E+06
Manganese (Non-diet)	7439-96-5	No	No	2.40E-02	S /Chronic	5.00E-05	IC/Chronic	-		-		-	4.00E-02	-	-	-	6.50E+01	-	1.16E+06
Mercuric Chloride	7487-94-7	No	No	3.00E-03	HC/Subchronic	3.00E-04	S /Chronic	-		-		-	7.00E-02	-	-	-	-	-	1.16E+06
Mercury (elemental)	7439-97-6	No	Yes	1.60E-04	C /Chronic	3.00E-04	HC/Subchronic	-		-		-	1.00E+00	-	-	7.53E+03	5.20E+01	-	1.16E+06
Nitrate (measured as nitrogen)	14797-55-8	No	No	4.00E+00	AF/Subchronic	-		-		-		-	1.00E+00	-	-	-	-	-	1.16E+06
Nitrite (measured as nitrogen)	14797-65-0	No	No	1.00E-01	AF/Subchronic	-		-		-		-	1.00E+00	-	-	-	-	-	1.16E+06
Potassium	7440-09-7	No	No	-		-		-		-		-	1.00E+00	-	-	-	5.50E+00	-	1.16E+06
Selenium	7782-49-2	No	No	5.00E-03	HC/Subchronic	2.00E-02	C /Chronic	-		-		-	1.00E+00	-	-	-	5.00E+00	-	1.16E+06
Sodium	7440-23-5	No	No	-		-		-		-		-	1.00E+00	-	-	-	1.00E+02	-	1.16E+06
Strontium, Stable	7440-24-6	No	No	2.00E+00	AF/Subchronic	-		-		-		-	1.00E+00	-	-	-	3.50E+01	-	1.16E+06
Sulfate	14808-79-8	No	No	-		-		-		-		-	1.00E+00	-	-	-	-	-	1.16E+06
Uranium (Soluble Salts)	7440-61-1	No	No	2.00E-04	AF/Subchronic	1.00E-04	AF/Subchronic	-		-		-	1.00E+00	-	-	-	4.50E+02	-	1.16E+06
Zinc and Compounds	7440-66-6	No	No	3.00E-01	AF/Subchronic	-		-		-		-	1.00E+00	-	-	-	6.20E+01	-	1.16E+06

Output generated 13MAR2023:12:25:19

Mass Loading = 8.62E-04

IEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrog

DA	Soil Saturation Concentration (mg/kg)	Solubility (mg/L)	RBA	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H ⁺ and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T _c (K)	T _c Ref	Ingestion PRG TR=1E-06 (mg/kg)	Dermal PRG TR=1E-06 (mg/kg)	Inhalation PRG TR=1E-06 (mg/kg)	Carcinogenic PRG TR=1E-06 (mg/kg)	Ingestion PRG HQ=0.1 (mg/kg)	Dermal PRG HQ=0.1 (mg/kg)	Inhalation PRG HQ=0.1 (mg/kg)	Noncarcinogenic PRG HI=0.1 (mg/kg)
-	-	-	6.00E-01	-	-		-	8.88E+02	PHYSPROP	1.67E+03	CRC	2.75E+01	1.72E+02	8.31E+01	1.85E+01	2.83E+02	1.76E+03	7.34E+00	7.12E+00
-	-	-	1.00E+00	-	-		-	1.87E+03	PHYSPROP	3.57E+03	YAWS	-	-	-	-	6.79E+03	-	2.45E+03	1.80E+03
-	-	-	1.00E+00	-	-		-	1.04E+03	PHYSPROP	2.29E+03	YAWS	-	-	1.98E+02	1.98E+02	1.70E+01	1.32E+02	4.40E+02	1.45E+01
-	-	-	1.00E+00	-	-		-	1.71E+03	PHYSPROP	3.27E+03	YAWS	-	-	-	-	-	-	-	-
-	-	-	1.00E+00	-	-		-	-		-		-	-	-	-	-	-	-	-
-	-	-	1.00E+00	-	-		-	2.02E+03	CRC	5.40E+03	YAWS	2.91E+03	-	2.98E+04	2.65E+03	-	-	-	8.00E+02
-	-	-	1.00E+00	-	-		-	1.37E+03	PHYSPROP	2.24E+03	YAWS	-	-	-	-	-	-	-	-
-	-	-	1.00E+00	-	-		-	2.37E+03	PHYSPROP	4.33E+03	CRC	-	-	-	-	8.15E+02	-	2.45E+01	2.37E+01
-	-	6.90E+04	1.00E+00	-	-		-	5.77E+02	CRC	9.73E+02	CRC	-	-	-	-	1.02E+02	-	1.47E+02	6.01E+01
1.10E-05	3.13E+00	6.00E-02	1.00E+00	8.62E-03	3.52E-01	PHYSPROP VP/S	3.52E-01	6.30E+02	PHYSPROP	1.76E+03	CRC	-	-	-	-	5.43E+00	-	9.43E-01	8.03E-01
-	-	-	1.00E+00	-	-		-	-		-		-	-	-	-	1.36E+05	-	-	1.36E+05
-	-	-	1.00E+00	-	-		-	-		-		-	-	-	-	3.39E+03	-	-	3.39E+03
-	-	-	1.00E+00	-	-		-	1.60E+03	PHYSPROP	2.22E+03	YAWS	-	-	-	-	-	-	-	-
-	-	-	1.00E+00	-	-		-	9.58E+02	PHYSPROP	1.77E+03	CRC	-	-	-	-	1.70E+02	-	9.78E+03	1.67E+02
-	-	-	1.00E+00	-	-		-	1.15E+03	PHYSPROP	2.57E+03	CRC	-	-	-	-	-	-	-	-
-	-	-	1.00E+00	-	-		-	1.66E+03	PHYSPROP	4.27E+03	YAWS	-	-	-	-	6.79E+04	-	-	6.79E+04
-	-	1.00E+06	1.00E+00	-	-		-	5.63E+02	EPI	-		-	-	-	-	-	-	-	-
-	-	-	1.00E+00	-	-		-	4.09E+03	CRC	1.37E+04	YAWS	-	-	-	-	6.79E+00	-	4.89E+01	5.96E+00
-	-	-	1.00E+00	-	-		-	1.18E+03	PHYSPROP	3.17E+03	YAWS	-	-	-	-	1.02E+04	-	-	1.02E+04

**Attachment D-2-5a. Onsite Trespasser, Surface Water Screening Level
Calculation Inputs, Radionuclides**

Variable	Value
TR (target cancer risk) unitless	0.000001
EF _{rec} (exposure frequency - recreator) day/yr	45
EF _{rec-c} (exposure frequency - recreator child) day/yr	45
EF _{rec-a} (exposure frequency - recreator adult) day/yr	45
ED _{rec} (exposure duration - recreator) yr	26
ED _{rec-c} (exposure duration - recreator child) yr	6
ED _{rec-a} (exposure duration - recreator adult) yr	20
ET _{event-rec-c} (exposure time - recreator child) hr/event	1
ET _{event-rec-a} (exposure time - recreator adult) hr/event	1
EV _{rec-c} (number of bathing events per day - recreator child) event/day	1
EV _{rec-a} (number of bathing events per day - recreator adult) event/day	1
DFA _{rec-adj} (age-adjusted immersion factor - recreator) hr	1170
IFW _{rec-adj} (age-adjusted water intake rate - recreator) L	131.4
IRW _{rec-c} (water intake rate - recreator child) L/hr	0.12
IRW _{rec-a} (water intake rate - recreator adult) L/hr	0.11

Output generated 19MAR2023:15:32:47

Attachment D-2-5b. Onsite Trespasser, Surface Water Screening Level Calculations, Radionuclides

Isotope	Water Ingestion Slope Factor (risk/pCi)	Immersion Slope Factor (risk/yr per pCi/L)	Ingestion PRG TR=1E-06 (pCi/L)	Immersion PRG TR=1E-06 (pCi/L)	Total PRG TR=1E-06 (pCi/L)	Total PRG TR=1E-06 (mg/L)
Th-228	1.08E-10	1.66E-14	7.07E+01	4.52E+08	7.07E+01	8.63E-11
Th-230	9.14E-11	3.01E-15	8.33E+01	2.49E+09	8.33E+01	4.04E-06
Th-232	1.01E-10	1.54E-15	7.53E+01	4.86E+09	7.53E+01	6.88E-01
U-234	7.07E-11	1.17E-15	1.08E+02	6.42E+09	1.08E+02	1.73E-05
U-235	6.96E-11	1.39E-12	1.09E+02	5.39E+06	1.09E+02	5.07E-02
U-238	6.40E-11	5.98E-16	1.19E+02	1.25E+10	1.19E+02	3.54E-01

Attachment D-2-6a. Onsite Trespasser, Surface Water Screening Level Calculation Inputs, Chemicals

Variable	Value
ED _{rec} (exposure duration - recreator) years	26
THQ (target hazard quotient) unitless	0.1
TR (target risk) unitless	0.000001
LT (lifetime - recreator) years	70
EF _{rec-w} (exposure frequency) days/year	45
Apparent thickness of stratum corneum (cm)	0.001
BW _a (body weight - adult) kg	80
SA _{rec} (skin surface area - adult) cm ²	19652
IRW _{rec} (water intake rate - adult) L/day	0.11
ET _{event-rec-adj} (age-adjusted exposure time) hours/event	1
ET _{event-rec-madj} (mutagenic age-adjusted exposure time) hours/event	1
IFW _{rec-adj} (age-adjusted water intake rate) L/kg	3.4
IFWM _{rec-adj} (mutagenic age-adjusted water intake rate) L/kg	14
DFW _{rec-adj} (age-adjusted dermal factor) cm ² -event/kg	335655
DFWM _{rec-adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	1053210
BW ₀₋₂ (body weight) kg	15
BW ₂₋₆ (body weight) kg	15
BW ₆₋₁₆ (body weight) kg	80
BW ₁₆₋₃₀ (body weight) kg	80
ED ₀₋₂ (exposure duration) years	2
ED ₂₋₆ (exposure duration) years	4
ED ₆₋₁₆ (exposure duration) years	10
ED ₁₆₋₃₀ (exposure duration) years	10
EF ₂₋₆ (exposure frequency) days/year	45
EF ₆₋₁₆ (exposure frequency) days/year	45
EF ₁₆₋₃₀ (exposure frequency) days/year	45
ET ₀₋₂ (exposure time) hours/event	1
ET ₂₋₆ (exposure time) hours/event	1
ET ₆₋₁₆ (exposure time) hours/event	1
ET ₁₆₋₃₀ (exposure time) hours/event	1
EV ₀₋₂ (events) events/day	1
EV ₂₋₆ (events) events/day	1
EV ₆₋₁₆ (events) events/day	1
EV ₁₆₋₃₀ (events) events/day	1
IRW ₀₋₂ (water intake rate) L/hour	0.12
IRW ₂₋₆ (water intake rate) L/hour	0.12
IRW ₆₋₁₆ (water intake rate) L/hour	0.124
IRW ₁₆₋₃₀ (water intake rate) L/hour	0.0985
SA ₀₋₂ (skin surface area) cm ²	6365
SA ₂₋₆ (skin surface area) cm ²	6365
SA ₆₋₁₆ (skin surface area) cm ²	19652
SA ₁₆₋₃₀ (skin surface area) cm ²	19652
ED _{rec-a} (exposure duration - adult) years	20
EF _{rec-a} (adult exposure frequency) days/year	45
ET _{rec-a} (adult exposure time) hours/event	1
EV _{rec-a} (adult) events/day	1
BW _{rec-a} (body weight - adult) kg	80
SA _{rec-a} (skin surface area - adult) cm ²	19652
IRW _{rec-a} (water intake rate - adult) L/hr	0.11

Attachment D-2-6b. Onsite Trespasser, Surface Water Screening Level Calculations, Chemicals

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate;

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	SF _o (mg/kg-day) ⁻¹	SF _o Re f	ABS _{gl}	K _p (cm/hr)	MW	EPD	Carcinogenic Absorbed dose per event (ug/cm ² -event)	Noncancer-child Absorbed dose per event (ug/cm ² -event)	Noncancer-adult Absorbed dose per event (ug/cm ² -event)	Noncancer-adjusted Absorbed dose per event (ug/cm ² -event)	Ingestion PRG TR=1E-06 (ug/L)	Dermal PRG TR=1E-06 (ug/L)	Carcinogenic PRG TR=1E-06 (ug/L)	Child Ingestion PRG HQ=0.1 (ug/L)	Child Dermal PRG HQ=0.1 (ug/L)	Noncarcinogenic Child PRG HI=0.1 (ug/L)	Adult Ingestion PRG HQ=0.1 (ug/L)	Adult Dermal PRG HQ=0.1 (ug/L)	Noncarcinogenic Adult PRG HI=0.1 (ug/L)	Adjusted Ingestion PRG HQ=0.1 (ug/L)	Adjusted Dermal PRG HQ=0.1 (ug/L)	Noncarcinogenic Adjusted PRG HI=0.1 (ug/L)
Aluminum	7429-90-5	No	No	1.00E+00	PC	-		1.00E+00	1.00E-03	2.70E+01	1.00E+00	-	1.91E+00	3.30E+00	2.83E+00	-	-	-	1.01E+05	1.91E+06	9.63E+04	5.90E+05	3.30E+06	5.00E+05	2.79E+05	2.83E+06	2.54E+05
Ammonia	7664-41-7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic, Inorganic	7440-38-2	No	No	3.00E-04	IC	1.50E+00	IC	1.00E+00	1.00E-03	7.49E+01	1.00E+00	5.07E-05	5.73E-04	9.91E-04	8.48E-04	5.01E+00	5.07E+01	4.56E+00	3.04E+01	5.73E+02	2.89E+01	1.77E+02	9.91E+02	1.50E+02	8.37E+01	8.48E+02	7.62E+01
Barium	7440-39-3	No	No	2.00E-01	IC	-		7.00E-02	1.00E-03	1.37E+02	1.00E+00	-	2.68E-02	4.62E-02	3.96E-02	-	-	-	2.03E+04	2.68E+04	1.15E+04	1.18E+05	4.62E+04	3.32E+04	5.58E+04	3.96E+04	2.32E+04
Beryllium and compounds	7440-41-7	No	No	2.00E-03	IC	-		7.00E-03	1.00E-03	9.01E+00	1.00E+00	-	2.68E-05	4.62E-05	3.96E-05	-	-	-	2.03E+02	2.68E+01	2.36E+01	1.18E+03	4.62E+01	4.45E+01	5.58E+02	3.96E+01	3.70E+01
Boron And Borates Only	7440-42-8	No	No	2.00E-01	IC	-		1.00E+00	1.00E-03	1.38E+01	1.00E+00	-	3.82E-01	6.60E-01	5.65E-01	-	-	-	2.03E+04	3.82E+05	1.93E+04	1.18E+05	6.60E+05	1.00E+05	5.58E+04	5.65E+05	5.08E+04
Cadmium (Water)	7440-43-9	No	No	1.00E-04	AF	-		5.00E-02	1.00E-03	1.12E+02	1.00E+00	-	9.56E-06	1.65E-05	1.41E-05	-	-	-	1.01E+01	9.56E+00	4.92E+00	5.90E+01	1.65E+01	1.29E+01	2.79E+01	1.41E+01	9.38E+00
Calcium	7440-70-2	No	No	-		-		1.00E+00	1.00E-03	4.01E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	16887-00-6	No	No	-		-		1.00E+00	1.00E-03	3.55E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insoluble Salts	16065-83-1	No	No	1.50E+00	IC	-		1.30E-02	1.00E-03	5.20E+01	1.00E+00	-	3.73E-02	6.44E-02	5.51E-02	-	-	-	1.52E+05	3.73E+04	2.99E+04	8.85E+05	6.44E+04	6.00E+04	4.19E+05	5.51E+04	4.87E+04
Chromium(VI)	18540-29-9	Yes	No	3.00E-03	IC	5.00E-01	C	2.50E-02	2.00E-03	5.20E+01	1.00E+00	1.21E-06	1.43E-04	2.48E-04	2.12E-04	3.65E+00	6.06E-01	5.20E-01	3.04E+02	7.17E+01	5.80E+01	1.77E+03	1.24E+02	1.16E+02	8.37E+02	1.06E+02	9.41E+01
Copper	7440-50-8	No	No	4.00E-02	HC	-		1.00E+00	1.00E-03	6.35E+01	1.00E+00	-	7.65E-02	1.32E-01	1.13E-01	-	-	-	4.06E+03	7.65E+04	3.85E+03	2.36E+04	1.32E+05	2.00E+04	1.12E+04	1.13E+05	1.02E+04
Fluoride	16984-48-8	No	No	4.00E-02	C	-		1.00E+00	1.00E-03	3.80E+01	1.00E+00	-	7.65E-02	1.32E-01	1.13E-01	-	-	-	4.06E+03	7.65E+04	3.85E+03	2.36E+04	1.32E+05	2.00E+04	1.12E+04	1.13E+05	1.02E+04
Iron	7439-89-6	No	No	7.00E-01	PC	-		1.00E+00	1.00E-03	5.58E+01	1.00E+00	-	1.34E+00	2.31E+00	1.98E+00	-	-	-	7.10E+04	1.34E+06	6.74E+04	4.13E+05	2.31E+06	3.50E+05	1.95E+05	1.98E+06	1.78E+05
Compounds	7439-92-1	No	No	-		8.50E-03	C	1.00E+00	1.00E-04	2.07E+02	1.00E+00	8.96E-03	-	-	-	8.84E+02	8.96E+04	8.75E+02	-	-	-	-	-	-	-	-	-
Magnesium diet)	7439-95-4	No	No	-		-		1.00E+00	1.00E-03	2.43E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7439-96-5	No	No	2.40E-02	S	-		4.00E-02	1.00E-03	5.49E+01	1.00E+00	-	1.84E-03	3.17E-03	2.71E-03	-	-	-	2.43E+03	1.84E+03	1.05E+03	1.42E+04	3.17E+03	2.59E+03	6.70E+03	2.71E+03	1.93E+03
Mercuric Chloride	7487-94-7	No	No	3.00E-04	IC	-		7.00E-02	1.00E-03	2.72E+02	1.00E+00	-	4.01E-05	6.93E-05	5.94E-05	-	-	-	3.04E+01	4.01E+01	1.73E+01	1.77E+02	6.93E+01	4.98E+01	8.37E+01	5.94E+01	3.47E+01
Mercuric Sulfide	1344-48-5	No	No	3.00E-04	S	-		1.00E+00	1.00E-03	2.33E+02	1.00E+00	-	5.73E-04	9.91E-04	8.48E-04	-	-	-	3.04E+01	5.73E+02	2.89E+01	1.77E+02	9.91E+02	1.50E+02	8.37E+01	8.48E+02	7.62E+01
Mercury (elemental)	7439-97-6	No	Yes	1.60E-04	C	-		1.00E+00	1.00E-03	2.01E+02	1.00E+00	-	3.06E-04	5.28E-04	4.52E-04	-	-	-	1.62E+01	3.06E+02	1.54E+01	9.44E+01	5.28E+02	8.01E+01	4.47E+01	4.52E+02	4.06E+01
Salts	NA	No	No	3.00E-04	S	-		7.00E-02	1.00E-03	-	1.00E+00	-	4.01E-05	6.93E-05	5.94E-05	-	-	-	3.04E+01	4.01E+01	1.73E+01	1.77E+02	6.93E+01	4.98E+01	8.37E+01	5.94E+01	3.47E+01
Methanol	67-56-1	No	Yes	2.00E+00	IC	-		1.00E+00	3.19E-04	3.20E+01	1.00E+00	-	3.82E+00	6.60E+00	5.65E+00	-	-	-	2.03E+05	9.10E+06	1.98E+05	1.18E+06	1.57E+07	1.10E+06	5.58E+05	1.35E+07	5.36E+05
Nickel Soluble Salts	7440-02-0	No	No	2.00E-02	IC	-		4.00E-02	2.00E-04	5.87E+01	1.00E+00	-	1.53E-03	2.64E-03	2.26E-03	-	-	-	2.03E+03	7.65E+03	1.60E+03	1.18E+04	1.32E+04	6.23E+03	5.58E+03	1.13E+04	3.74E+03
(measured as Potassium	NA	No	No	-		-		1.00E+00	1.00E-03	-	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7440-09-7	No	No	-		-		1.00E+00	2.00E-03	3.91E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium respirable)	7782-49-2	No	No	5.00E-03	IC	-		1.00E+00	1.00E-03	7.90E+01	1.00E+00	-	9.56E-03	1.65E-02	1.41E-02	-	-	-	5.07E+02	9.56E+03	4.81E+02	2.95E+03	1.65E+04	2.50E+03	1.40E+03	1.41E+04	1.27E+03
	7631-86-9	No	No	-		-		1.00E+00	1.00E-03	6.01E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon	7440-21-3	No	No	-		-		1.00E+00	1.00E-03	2.81E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	7440-22-4	No	No	5.00E-03	IC	-		4.00E-02	6.00E-04	1.08E+02	1.00E+00	-	3.82E-04	6.60E-04	5.65E-04	-	-	-	5.07E+02	6.37E+02	2.82E+02	2.95E+03	1.10E+03	8.02E+02	1.40E+03	9.42E+02	5.63E+02
Sodium	7440-23-5	No	No	-		-		1.00E+00	1.00E-03	2.30E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium, Stable	7440-24-6	No	No	6.00E-01	IC	-		1.00E+00	1.00E-03	8.76E+01	1.00E+00	-	1.15E+00	1.98E+00	1.70E+00	-	-	-	6.08E+04	1.15E+06	5.78E+04	3.54E+05	1.98E+06	3.00E+05	1.67E+05	1.70E+06	1.52E+05
Sulfate	14808-79-8	No	No	-		-		1.00E+00	1.00E-03	9.81E+01	1.00E+00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium (Soluble Salts)	7440-28-0	No	No	1.00E-05	XC	-		1.00E+00	1.00E-03	2.04E+02	1.00E+00	-	1.91E-05	3.30E-05	2.83E-05	-	-	-	1.01E+00	1.91E+01	9.63E-01	5.90E+00	3.30E+01	5.00E+00	2.79E+00	2.83E+01	2.54E+00
Uranium (Soluble Salts)	7440-61-1	No	No	2.00E-04	AF	-		1.00E+00	1.00E-03	2.38E+02	1.00E+00	-	3.82E-04	6.60E-04	5.65E-04	-	-	-	2.03E+01	3.82E+02	1.93E+01	1.18E+02	6.60E+02	1.00E+02	5.58E+01	5.65E+02	5.08E+01
Zinc and Compounds	7440-66-6	No	No	3.00E-01	IC	-		1.00E+00	6.00E-04	6.54E+01	1.00E+00	-	5.73E-01	9.91E-01	8.48E-01	-	-	-	3.04E+04	9.56E+05	2.95E+04	1.77E+05	1.65E+06	1.60E+05	8.37E+04	1.41E+06	7.91E+04

Attachment D-2-7a. Offsite Resident Farmer, Soil Screening Level Calculation Inputs, Chemicals

Variable	Value
THQ (target hazard quotient) unitless	0.1
TR (target cancer risk) unitless	0.000001
LT (lifetime - resident) yr	70
IRF _{far-a} (fruit intake rate - adult) mg/day	176800
IRF _{far-c} (fruit intake rate - child) mg/day	68100
IFF _{far-adj} (age-adjusted fruit intake rate) mg-year/kg-day	35833000
IRV _{far-a} (vegetable intake rate - adult) mg/day	125700
IRV _{far-c} (vegetable intake rate - child) mg/day	41700
IFV _{far-adj} (age-adjusted vegetable intake rate) mg-year/kg-day	24535875
IRB _{far-a} (beef intake rate - adult) mg/day	178000
IRB _{far-c} (beef intake rate - child) mg/day	40100
IFB _{far-adj} (age-adjusted beef intake rate) mg-year/kg-day	32091500
IRD _{far-a} (dairy intake rate - adult) mg/day	445600
IRD _{far-c} (dairy intake rate - child) mg/day	349500
IFD _{far-adj} (age-adjusted dairy intake rate) mg-year/kg-day	115213000
BW _{far-a} (body weight - adult) kg	80
BW _{far-c} (body weight - child) kg	15
ED _{far-a} (exposure duration - adult) yr	34
ED _{far-c} (exposure duration - child) yr	6
EF _{far-c} (exposure frequency - child) day/yr	350
EF _{far-a} (exposure frequency - adult) day/yr	350
CF _{far-produce} (contaminated intake fraction) unitless	1
CF _{far-beef} (contaminated intake fraction - beef) unitless	1
CF _{far-dairy} (contaminated intake fraction - dairy) unitless	1
MLF _{pasture} (pasture plant mass loading factor) unitless	0.25
MLF _{produce} (produce plant mass loading factor) unitless	0.0135
Q _{p-dairy} (dairy fodder intake rate) kg/day	20.3
f _{p-dairy} (fraction of time animal is on-site) unitless	1
f _{s-dairy} (fraction of animal's food from site when on-site) unitless	1
Q _{s-dairy} (dairy soil intake rate) kg/day	0.4
Q _{p-beef} (beef fodder intake rate) kg/day	11.77
Q _{s-beef} (beef soil intake rate) kg/day	0.5
f _{p-beef} (fraction of time animal is on-site) unitless	1
f _{s-beef} (fraction of year animal is on site) unitless	1

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Attachment D-2-7b. Offsite Resident Farmer, Soil Screening Level Calculations, Chemicals

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate;

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	SF ₆ (mg/kg-day) ⁻¹	SF ₆ Ref	Soil-to-Plant Transfer Factor (kg-dry soil per kg-fresh plant)	Soil-to-Plant Transfer Factor (kg-dry soil per kg-dry plant)	Soil-to-Dairy Transfer Factor (day/kg)	Soil-to-Beef Transfer Factor (day/kg)	Produce Ingestion PRG TR=1E-06 (mg/kg)	Dairy Ingestion PRG TR=1E-06 (mg/kg)	Beef Ingestion PRG TR=1E-06 (mg/kg)	Produce Ingestion PRG HQ=0.1 (mg/kg)	Dairy Ingestion PRG HQ=0.1 (mg/kg)	Beef Ingestion PRG HQ=0.1 (mg/kg)
Arsenic, Inorganic	7440-38-2	No	No	3.00E-04	IC	1.50E+00	IC	1.00E-02	4.00E-02	6.00E-05	2.00E-03	1.20E-02	3.92E-01	6.78E-02	1.82E-01	3.58E+00	1.50E+00
Barium	7440-39-3	No	No	2.00E-01	IC	-	-	3.75E-02	1.50E-01	3.50E-04	1.50E-04	-	-	-	5.59E+01	3.00E+02	9.99E+03
Cadmium (Diet)	7440-43-9	No	No	1.00E-04	AF	-	-	1.25E-01	5.00E-01	1.00E-03	5.50E-04	-	-	-	1.03E-02	2.86E-02	7.60E-01
Calcium	7440-70-2	No	No	-	-	-	-	1.65E+01	8.24E+01	2.13E-09	6.73E-09	-	-	-	-	-	-
Lead and Compounds	7439-92-1	No	No	-	-	8.50E-03	C	1.13E-02	4.50E-02	2.50E-04	4.00E-04	2.01E+00	1.63E+01	5.90E+01	-	-	-
Magnesium	7439-95-4	No	No	-	-	-	-	2.50E-01	1.00E+00	4.00E-03	5.00E-03	-	-	-	-	-	-
Manganese (Diet)	7439-96-5	No	No	1.40E-01	IC	-	-	6.25E-02	2.50E-01	3.50E-04	4.00E-04	-	-	-	2.62E+01	1.70E+02	2.14E+03
Nitrate (measured as nitrogen)	14797-55-8	No	No	1.60E+00	IC	-	-	-	-	-	-	-	-	-	1.69E+03	-	-
Potassium	7440-09-7	No	No	-	-	-	-	2.50E-01	1.00E+00	7.00E-03	2.00E-02	-	-	-	-	-	-
Selenium	7782-49-2	No	No	5.00E-03	IC	-	-	6.25E-03	2.50E-02	4.00E-03	1.50E-02	-	-	-	3.61E+00	9.35E-01	3.48E+00
Sodium	7440-23-5	No	No	-	-	-	-	1.88E-02	7.50E-02	3.50E-02	5.50E-02	-	-	-	-	-	-
Strontium, Stable	7440-24-6	No	No	6.00E-01	IC	-	-	6.25E-01	2.50E+00	1.50E-03	3.00E-04	-	-	-	1.34E+01	3.18E+01	2.37E+03
Uranium (Soluble Salts)	7440-61-1	No	No	2.00E-04	AF	-	-	2.13E-03	8.50E-03	6.00E-04	2.00E-04	-	-	-	1.82E-01	2.64E-01	1.10E+01
Zinc and Compounds	7440-66-6	No	No	3.00E-01	IC	-	-	2.64E-01	9.90E-01	2.68E-09	1.00E-01	-	-	-	1.54E+01	1.96E+07	7.75E+00

Attachment D-2-8. Pathway-Specific and Total Soil Screening Levels for the Offsite Resident Farmer Scenario

CAS No.	Parameter	Resident Farmer Pathway-Specific Screening Levels (mg/kg) ^a				Total Screening Level (All Pathways) (mg/kg) ^b
		Produce Consumption	Dairy Consumption	Beef Consumption	Residential Soil	
7440-38-2	Arsenic	1.20E-02	3.92E-01	6.78E-02	6.80E-01	9.79E-03
7440-39-3	Barium	5.59E+01	3.00E+02	9.99E+03	1.50E+03	4.55E+01
7440-43-9	Cadmium	1.03E-02	2.86E-02	7.60E-01	7.10E-01	7.42E-03
7440-70-2	Calcium	NA	NA	NA	NA	NA
7439-92-1	Lead	2.01E+00	1.63E+01	5.90E+01	4.00E+02	1.73E+00
7439-95-4	Magnesium	NA	NA	NA	NA	NA
7439-96-5	Manganese	2.62E+01	1.70E+02	2.14E+03	1.80E+02	2.00E+01
14797-55-8	Nitrate (measured as nitrogen)	1.69E+03	NA	NA	1.30E+04	1.69E+03
7440-09-7	Potassium	NA	NA	NA	NA	NA
7782-49-2	Selenium	3.61E+00	9.35E-01	3.48E+00	3.90E+01	6.03E-01
7440-23-5	Sodium	NA	NA	NA	NA	NA
7440-24-6	Strontium	1.34E+01	3.18E+01	2.37E+03	4.70E+03	9.37E+00
7440-61-1	Uranium	1.82E-01	2.64E-01	1.10E+01	1.60E+00	1.00E-01
7440-66-6	Zinc	1.54E+01	1.96E+07	7.75E+00	2.30E+03	5.14E+00

Notes

^a Each pathway-specific screening level is the lower of the carcinogenic and noncarcinogenic screening levels targeting a risk of 1E-06 and a hazard quotient of 0.1, respectively.

^b Calculated based on 1 divided by the sum of the inverses of pathway-specific screening levels.

NA - Not available.

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ATTACHMENT D-3

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Table D-3-1. Calculations of Surface Soil Concentration Attenuation Factors for Air Transport of Radionuclides from Onsite Pond Sediment to Offsite Soil Locations under Remedial Alternative 1, Shiprock, New Mexico, Disposal Site

Radionuclide	Pond Sediment EPC (pCi/g) ^a	Maximum Offsite Surface Soil Conc. From Air Deposition (pCi/g) ^b	Minimum Attenuation Factor from Pond to Offsite Location (unitless) ^c
Location A			
U-234	1.49E+01	4.70E-09	3.16E+09
U-235	9.55E-01	3.02E-10	3.16E+09
U-238	1.31E+01	4.14E-09	3.16E+09
Location B			
U-234	1.49E+01	2.18E-08	6.81E+08
U-235	9.55E-01	1.40E-09	6.82E+08
U-238	1.31E+01	1.92E-08	6.81E+08
Location C			
U-234	1.49E+01	5.41E-08	2.74E+08
U-235	9.55E-01	3.48E-09	2.74E+08
U-238	1.31E+01	4.77E-08	2.74E+08
Location D			
U-234	1.49E+01	5.52E-08	2.69E+08
U-235	9.55E-01	3.55E-09	2.69E+08
U-238	1.31E+01	4.86E-08	2.69E+08
Location E			
U-234	1.49E+01	1.46E-07	1.01E+08
U-235	9.55E-01	9.41E-09	1.01E+08
U-238	1.31E+01	1.29E-07	1.01E+08
Location F			
U-234	1.49E+01	5.95E-08	2.50E+08
U-235	9.55E-01	3.83E-09	2.49E+08
U-238	1.31E+01	5.24E-08	2.50E+08

Notes

^a The pond EPCs are the initial sediment source terms entered into the RESRAD-OFFSITE model (version 4.0).

^b The receptor-specific, offsite surface soil concentration under Alternative 1 is the maximum concentration that results over a 1,000-year period of evaluation from pond sediment releases to air, while taking into account dispersion and soil deposition as calculated in the RESRAD-OFFSITE model. The offsite concentration concentration is determined for that portion of the receptor area closest in proximity to the pond. This ensures that the minimum attenuation factor is determined for health-conservative evaluations of non-radiological contaminants.

^c The minimum attenuation factor from atmospheric transport of sediment dusts from the pond to each offsite location is calculated by dividing the EPC at the Pond by the maximum concentration that occurs in offsite surface over a 1,000-year period of evaluation.

Table D-3-2. Calculations of Maximum Surface Soil Concentrations of Chemicals at Offsite Receptor Locations from Onsite Pond Sediment Dust Emissions via Air Transport and Deposition under Alternative 1, Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Maximum Pond Detection (mg/kg)	Attenuation Factor to Offsite Location (unitless) ^a						Predicted Surface Soil Concentration at Offsite Location (mg/kg) ^b					
			Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	0.688	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	2.18E-10	1.01E-09	2.51E-09	2.56E-09	6.78E-09	2.76E-09
7440-39-3	Barium	19.7	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	6.23E-09	2.89E-08	7.18E-08	7.32E-08	1.94E-07	7.90E-08
7440-43-9	Cadmium	0.0633	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	2.00E-11	9.29E-11	2.31E-10	2.35E-10	6.24E-10	2.54E-10
7440-70-2	Calcium	88,700	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	2.81E-05	1.30E-04	3.23E-04	3.30E-04	8.74E-04	3.56E-04
7439-92-1	Lead	1.03	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	3.26E-10	1.51E-09	3.75E-09	3.83E-09	1.01E-08	4.13E-09
7439-95-4	Magnesium	53,400	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	1.69E-05	7.84E-05	1.95E-04	1.98E-04	5.26E-04	2.14E-04
7439-96-5	Manganese	288	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	9.11E-08	4.23E-07	1.05E-06	1.07E-06	2.84E-06	1.16E-06
14797-55-8	Nitrate as Nitrogen	26,400	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	8.35E-06	3.88E-05	9.62E-05	9.81E-05	2.60E-04	1.06E-04
7440-09-7	Potassium	6,800	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	2.15E-06	9.98E-06	2.48E-05	2.53E-05	6.70E-05	2.73E-05
7782-49-2	Selenium	34.7	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	1.10E-08	5.09E-08	1.26E-07	1.29E-07	3.42E-07	1.39E-07
7440-23-5	Sodium	244,000	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	7.72E-05	3.58E-04	8.89E-04	9.07E-04	2.40E-03	9.79E-04
7440-24-6	Strontium	1,280	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	4.05E-07	1.88E-06	4.66E-06	4.76E-06	1.26E-05	5.13E-06
7440-61-1	Uranium	50.6	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	1.60E-08	7.43E-08	1.84E-07	1.88E-07	4.99E-07	2.03E-07
7440-66-6	Zinc	21.5	3.16E+09	6.81E+08	2.74E+08	2.69E+08	1.01E+08	2.49E+08	6.80E-09	3.16E-08	7.83E-08	7.99E-08	2.12E-07	8.62E-08

Notes:

^a Under Alternative 1, location-specific attenuation factors are the minimum concentration reduction factors determined from RESRAD-OFFSITE modeling of atmospheric transport from pond sediment to surface soil at the hypothetical offsite resident farmer locations determined over a 1,000-year period of evaluation. The factors incorporate model-calculated dispersion and soil deposition processes that occur during atmospheric transport of dusts released as a result of wind erosion under the no-action alternative, assuming dry sediment conditions.

^b Offsite surface soil concentrations are calculated to result from releases of pond sediment dust into the air under Alternative 1, followed by deposition. The offsite surface soil concentrations are calculated for each chemical by dividing the maximum detected pond sediment concentration by the corresponding attenuation factor for the offsite receptor location of interest.

Table D-3-3. Calculations of Air Concentration Attenuation Factors for Transport of Radionuclides in Dust Emissions Above Onsite Pond Sediment to Air above Offsite Soil Locations under Remedial Alternative 1, Shiprock, New Mexico, Disposal Site

Radionuclide	Pond Sediment EPC (pCi/g) ^a	Modeled Max. Air Conc. of Radionuclide Above Pond (pCi/m ³) ^b	Modeled Dust Conc. in Air Above Pond (g/m ³) ^c	Modeled Max. Air Conc. Above Offsite Area (pCi/m ³) ^d	Air Conc. Attenuation Factor (unitless) ^e	Minimum Attenuation Factor (unitless) ^f
Location A						
U-234	1.49E+01	1.92E-06	1.29E-07	5.90E-10	3.25E+03	3.24E+03
U-235	9.55E-01	1.23E-07	1.29E-07	3.80E-11	3.24E+03	
U-238	1.31E+01	1.69E-06	1.29E-07	5.20E-10	3.25E+03	
Location B						
U-234	1.49E+01	1.92E-06	1.29E-07	2.74E-09	7.01E+02	6.98E+02
U-235	9.55E-01	1.23E-07	1.29E-07	1.76E-10	6.99E+02	
U-238	1.31E+01	1.69E-06	1.29E-07	2.42E-09	6.98E+02	
Location C						
U-234	1.49E+01	1.92E-06	1.29E-07	6.80E-09	2.82E+02	2.81E+02
U-235	9.55E-01	1.23E-07	1.29E-07	4.37E-10	2.81E+02	
U-238	1.31E+01	1.69E-06	1.29E-07	5.99E-09	2.82E+02	
Location D						
U-234	1.49E+01	1.92E-06	1.29E-07	6.93E-09	2.77E+02	2.76E+02
U-235	9.55E-01	1.23E-07	1.29E-07	4.45E-10	2.76E+02	
U-238	1.31E+01	1.69E-06	1.29E-07	6.10E-09	2.77E+02	
Location E						
U-234	1.49E+01	1.92E-06	1.29E-07	1.81E-08	1.06E+02	1.06E+02
U-235	9.55E-01	1.23E-07	1.29E-07	1.16E-09	1.06E+02	
U-238	1.31E+01	1.69E-06	1.29E-07	1.59E-08	1.06E+02	
Location F						
U-234	1.49E+01	1.92E-06	1.29E-07	7.48E-09	2.57E+02	2.56E+02
U-235	9.55E-01	1.23E-07	1.29E-07	4.81E-10	2.56E+02	
U-238	1.31E+01	1.69E-06	1.29E-07	6.59E-09	2.56E+02	

Notes

^a The pond EPCs are the initial sediment source terms entered into the RESRAD-OFFSITE model (version 4.0).

^b Radionuclide concentrations in air above pond were calculated using the RESRAD-OFFSITE model.

^c Dust concentrations in the air above the pond are calculated by dividing the modeled maximum air concentrations above the pond by the sediment EPC in the pond.

^d Radionuclide concentrations in air above offsite location were calculated using the RESRAD-OFFSITE model.

^e Air concentration attenuation factor is calculated by dividing the modeled maximum air concentration above the pond by the modeled maximum air concentration above the offsite location.

^f The minimum air attenuation factor is conservatively used for each offsite location for estimating air concentrations of non-radiological contaminants.

Table D-3-4. Calculations of Maximum Air Concentrations of Chemicals Above Offsite Receptor Locations from Onsite Pond Sediment Dust Emissions to the Air under Alternative 1, Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Maximum Pond Detection (mg/kg)	Modeled Dust Conc. in Air Above Pond (g/m ³) ^a	Maximum Air Conc. of Chemical above Pond (µg/m ³) ^b	Attenuation Factor to Offsite Location (unitless) ^c						Predicted Air Concentration of Chemical at Offsite Location (µg/m ³) ^d					
					Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	0.688	1.29E-07	8.90E-08	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	2.75E-11	1.27E-10	3.16E-10	3.22E-10	8.39E-10	3.48E-10
7440-39-3	Barium	19.7	1.29E-07	2.55E-06	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	7.87E-10	3.65E-09	9.05E-09	9.22E-09	2.40E-08	9.96E-09
7440-43-9	Cadmium	0.0633	1.29E-07	8.18E-09	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	2.53E-12	1.17E-11	2.91E-11	2.96E-11	7.72E-11	3.20E-11
7440-70-2	Calcium	88,700	1.29E-07	1.15E-02	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	3.54E-06	1.64E-05	4.07E-05	4.15E-05	1.08E-04	4.48E-05
7439-92-1	Lead	1.03	1.29E-07	1.33E-07	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	4.11E-11	1.91E-10	4.73E-10	4.82E-10	1.26E-09	5.21E-10
7439-95-4	Magnesium	53,400	1.29E-07	6.90E-03	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	2.13E-06	9.89E-06	2.45E-05	2.50E-05	6.51E-05	2.70E-05
7439-96-5	Manganese	288	1.29E-07	3.72E-05	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	1.15E-08	5.33E-08	1.32E-07	1.35E-07	3.51E-07	1.46E-07
14797-55-8	Nitrate as Nitrogen	26,400	1.29E-07	3.41E-03	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	1.05E-06	4.89E-06	1.21E-05	1.23E-05	3.22E-05	1.33E-05
7440-09-7	Potassium	6,800	1.29E-07	8.79E-04	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	2.72E-07	1.26E-06	3.12E-06	3.18E-06	8.29E-06	3.44E-06
7782-49-2	Selenium	34.7	1.29E-07	4.49E-06	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	1.39E-09	6.42E-09	1.59E-08	1.62E-08	4.23E-08	1.75E-08
7440-23-5	Sodium	244,000	1.29E-07	3.15E-02	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	9.75E-06	4.52E-05	1.12E-04	1.14E-04	2.97E-04	1.23E-04
7440-24-6	Strontium	1,280	1.29E-07	1.65E-04	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	5.11E-08	2.37E-07	5.88E-07	5.99E-07	1.56E-06	6.47E-07
7440-61-1	Uranium	50.6	1.29E-07	6.54E-06	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	2.02E-09	9.37E-09	2.32E-08	2.37E-08	6.17E-08	2.56E-08
7440-66-6	Zinc	21.5	1.29E-07	2.78E-06	3.24E+03	6.98E+02	2.81E+02	2.76E+02	1.06E+02	2.56E+02	8.59E-10	3.98E-09	9.88E-09	1.01E-08	2.62E-08	1.09E-08

Notes:

^a The mass loading factor being applied to detected chemicals was determined by dividing the air concentration above the pond (as determined using RESRAD-OFFSITE for uranium isotopes) by the corresponding pond sediment concentrations.

^b The maximum air concentration (C_A) of each chemical above the pond was determined using the following equation:

$$C_A \text{ (}\mu\text{g/m}^3\text{)} = C_{SED} \text{ (mg/kg)} \times C_{DUST} \text{ (g/m}^3\text{)} \times CF_{SED} \text{ (1 kg/1000 mg)} \times CF_{CHEM} \text{ (1000 }\mu\text{g/1 mg)}$$

Where: C_{SED} = Chemical concentration in sediment (mg/kg)

C_{DUST} = Dust concentration in Air above pond (g/m³)

CF_{SED} = Mass conversion factor for sediment (kg/mg)

CF_{CHEM} = Mass conversion factor for chemical (µg/mg)

^c Air concentration attenuation factor is calculated by dividing the modeled maximum air concentration above the pond by the modeled maximum air concentration above the offsite location.

^d Offsite air concentrations above each offsite location are calculated to result from releases of pond sediment dust into the air under Alternative 1, followed by offsite transport and dispersion. An air concentration for each chemical, above each offsite location, is calculated by dividing the maximum air chemical concentration by the corresponding attenuation factor for the offsite receptor location of interest.

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ATTACHMENT D-4

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Table D-4-1. Calculations of Surface Soil Concentration Attenuation Factors for Air Transport of Radionuclides from Onsite Pond Sediment to Offsite Soil Locations During Alternatives 2 & 3 Remediation, Shiprock, New Mexico, Disposal Site

Radionuclide	Pond Sediment EPC (pCi/g) ^a	Maximum Offsite Surface Soil Conc. From Air Deposition (pCi/g) ^b	Minimum Attenuation Factor from Pond to Offsite Location (unitless) ^c
Location A			
U-234	1.49E+01	1.94E-06	7.67E+06
U-235	9.55E-01	1.24E-07	7.67E+06
U-238	1.31E+01	1.70E-06	7.67E+06
Location B			
U-234	1.49E+01	8.99E-06	1.65E+06
U-235	9.55E-01	5.78E-07	1.65E+06
U-238	1.31E+01	7.92E-06	1.65E+06
Location C			
U-234	1.49E+01	2.23E-05	6.66E+05
U-235	9.55E-01	1.43E-06	6.66E+05
U-238	1.31E+01	1.96E-05	6.66E+05
Location D			
U-234	1.49E+01	2.28E-05	6.53E+05
U-235	9.55E-01	1.46E-06	6.53E+05
U-238	1.31E+01	2.00E-05	6.53E+05
Location E			
U-234	1.49E+01	6.00E-05	2.47E+05
U-235	9.55E-01	3.86E-06	2.47E+05
U-238	1.31E+01	5.29E-05	2.47E+05
Location F			
U-234	1.49E+01	2.45E-05	6.06E+05
U-235	9.55E-01	1.58E-06	6.06E+05
U-238	1.31E+01	2.16E-05	6.06E+05

Notes

^a The pond EPCs are the initial sediment source terms entered into the RESRAD-OFFSITE model (version 4.0).

^b The receptor-specific, offsite surface soil concentration is the concentration that results from one year of atmospheric releases that occur during pond remediation (i.e., Alternatives 2 & 3) and takes into account dispersion and deposition as calculated in the RESRAD-OFFSITE model. The offsite concentration concentration is determined for that portion of the receptor area closest in proximity to the pond. This ensures that the minimum attenuation factor is determined for health-conservative evaluations of non-radiological contaminants. As part of the evaluation of Alternatives 2 and 3, the maximum offsite surface soil concentrations are then used as EPCs in the RESRAD-ONSITE model to estimate post-remediation risks for offsite residents over an exposure duration of 26 years (EPA, 2014).

^c The minimum attenuation factor from atmospheric transport of sediment dusts from the pond to each offsite location is calculated by dividing the EPC at the Pond by the maximum concentration that occurs in offsite surface soil throughout the duration of remediation (assumed to be one year).

Table D-4-2. Calculations of Maximum Post-Remedy Offsite Surface Soil Concentrations at Offsite Receptor Locations from Onsite Pond Sediment Dust Emissions via Air Transport and Deposition, Alternatives 2 and 3, Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Maximum Pond Detection (mg/kg)	Attenuation Factor to Offsite Location (unitless) ^a						Predicted Surface Soil Concentration at Offsite Location (mg/kg) ^b					
			Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	0.688	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	8.97E-08	4.16E-07	1.03E-06	1.05E-06	2.78E-06	1.14E-06
7440-39-3	Barium	19.7	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	2.57E-06	1.19E-05	2.96E-05	3.02E-05	7.96E-05	3.25E-05
7440-43-9	Cadmium	0.0633	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	8.25E-09	3.83E-08	9.50E-08	9.70E-08	2.56E-07	1.05E-07
7440-70-2	Calcium	88,700	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	1.16E-02	5.37E-02	1.33E-01	1.36E-01	3.59E-01	1.46E-01
7439-92-1	Lead	1.03	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	1.34E-07	6.23E-07	1.55E-06	1.58E-06	4.16E-06	1.70E-06
7439-95-4	Magnesium	53,400	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	6.96E-03	3.23E-02	8.02E-02	8.18E-02	2.16E-01	8.82E-02
7439-96-5	Manganese	288	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	3.75E-05	1.74E-04	4.32E-04	4.41E-04	1.16E-03	4.76E-04
14797-55-8	Nitrate as Nitrogen	26,400	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	3.44E-03	1.60E-02	3.96E-02	4.05E-02	1.07E-01	4.36E-02
7440-09-7	Potassium	6,800	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	8.86E-04	4.12E-03	1.02E-02	1.04E-02	2.75E-02	1.12E-02
7782-49-2	Selenium	34.7	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	4.52E-06	2.10E-05	5.21E-05	5.32E-05	1.40E-04	5.73E-05
7440-23-5	Sodium	244,000	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	3.18E-02	1.48E-01	3.66E-01	3.74E-01	9.86E-01	4.03E-01
7440-24-6	Strontium	1,280	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	1.67E-04	7.75E-04	1.92E-03	1.96E-03	5.17E-03	2.11E-03
7440-61-1	Uranium	50.6	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	6.59E-06	3.06E-05	7.60E-05	7.75E-05	2.05E-04	8.36E-05
7440-66-6	Zinc	21.5	7.67E+06	1.65E+06	6.66E+05	6.53E+05	2.47E+05	6.06E+05	2.80E-06	1.30E-05	3.23E-05	3.29E-05	8.69E-05	3.55E-05

Notes:

^a Under Alternatives 2 and 3 scenario, location-specific attenuation factors are the concentration reduction factors determined from RESRAD-OFFSITE modeling of atmospheric transport dusts from pond sediment to surface soil at hypothetical offsite resident farmer locations, following one year of remediation. The factors incorporate model-calculated dispersion and soil deposition processes that occur during atmospheric transport of dusts released during mechanical disturbance of the pond sediment during remediation.

^b Offsite surface soil concentrations due to pond sediment releases to the air and subsequent deposition during pond remediation (assumed to occur for one year) are calculated for each chemical by dividing the maximum detected pond sediment concentration by the corresponding attenuation factor for the offsite receptor location of interest.

Table D-4-3. Calculations of Air Concentration Attenuation Factors for Transport of Radionuclides in Dust Emissions above Onsite Pond Sediment to Air above Offsite Locations Soil from Pond Remediation Activities under Alternatives 2 & 3, Shiprock, New Mexico, Disposal Site

Radionuclide	Pond Sediment EPC (pCi/g) ^a	Modeled Max. Air Conc. Above Pond (pCi/m ³) ^b	Modeled Dust Conc. in Air Above Pond (g/m ³) ^c	Modeled Max. Air Conc. Above Offsite Area (pCi/m ³) ^d	Air Conc. Attenuation Factor (unitless) ^e	Minimum Attenuation Factor (unitless) ^f
Location A						
U-234	1.49E+01	4.57E-02	3.08E-03	1.40E-05	3.27E+03	3.24E+03
U-235	9.55E-01	2.94E-03	3.08E-03	9.07E-07	3.24E+03	
U-238	1.31E+01	4.03E-02	3.08E-03	1.24E-05	3.25E+03	
Location B						
U-234	1.49E+01	4.57E-02	3.08E-03	6.56E-05	6.97E+02	6.97E+02
U-235	9.55E-01	2.94E-03	3.08E-03	4.22E-06	6.97E+02	
U-238	1.31E+01	4.03E-02	3.08E-03	5.77E-05	6.98E+02	
Location C						
U-234	1.49E+01	4.57E-02	3.08E-03	1.62E-04	2.82E+02	2.82E+02
U-235	9.55E-01	2.94E-03	3.08E-03	1.04E-05	2.83E+02	
U-238	1.31E+01	4.03E-02	3.08E-03	1.43E-04	2.82E+02	
Location D						
U-234	1.49E+01	4.57E-02	3.08E-03	1.65E-04	2.76E+02	2.76E+02
U-235	9.55E-01	2.94E-03	3.08E-03	1.06E-05	2.76E+02	
U-238	1.31E+01	4.03E-02	3.08E-03	1.46E-04	2.76E+02	
Location E						
U-234	1.49E+01	4.57E-02	3.08E-03	4.32E-04	1.06E+02	1.06E+02
U-235	9.55E-01	2.94E-03	3.08E-03	2.78E-05	1.06E+02	
U-238	1.31E+01	4.03E-02	3.08E-03	3.81E-04	1.06E+02	
Location F						
U-234	1.49E+01	4.57E-02	3.08E-03	1.79E-04	2.56E+02	2.56E+02
U-235	9.55E-01	2.94E-03	3.08E-03	1.15E-05	2.56E+02	
U-238	1.31E+01	4.03E-02	3.08E-03	1.57E-04	2.56E+02	

Notes

^a The pond EPCs are the initial sediment source terms entered into the RESRAD-OFFSITE model (version 4.0).

^b Radionuclide concentrations in air above pond were calculated using the RESRAD-OFFSITE model.

^c Dust concentrations in the air above the pond are calculated by dividing the modeled maximum air concentrations above the pond by the sediment EPC in the pond.

^d Radionuclide concentrations in air above offsite location were calculated using the RESRAD-OFFSITE model.

^e Air concentration attenuation factor is calculated by dividing the modeled maximum air concentration above the pond by the modeled maximum air concentration above the offsite location.

^f The minimum air attenuation factor is conservatively used for each offsite location for estimating air concentrations of non-radiological contaminants.

Table D-4-4. Calculations of Maximum Air Concentrations of Chemicals Above Offsite Receptor Locations from Onsite Pond Sediment Dust Emissions to the Air During Alternatives 2 & 3 Remediation, Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Maximum Pond Detection (mg/kg)	Modeled Dust Conc. in Air Above Pond (g/m ³) ^a	Maximum Air Conc. of Chemical above Pond (µg/m ³) ^b	Attenuation Factor to Offsite Location (unitless) ^c						Predicted Air Concentration of Chemical at Offsite Location (µg/m ³) ^d					
					Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	0.688	3.08E-03	2.12E-03	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	6.54E-07	3.04E-06	7.51E-06	7.67E-06	2.00E-05	8.28E-06
7440-39-3	Barium	19.7	3.08E-03	6.07E-02	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	1.87E-05	8.70E-05	2.15E-04	2.20E-04	5.73E-04	2.37E-04
7440-43-9	Cadmium	0.0633	3.08E-03	1.95E-04	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	6.01E-08	2.80E-07	6.91E-07	7.05E-07	1.84E-06	7.62E-07
7440-70-2	Calcium	88,700	3.08E-03	2.73E+02	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	8.43E-02	3.92E-01	9.68E-01	9.88E-01	2.58E+00	1.07E+00
7439-92-1	Lead	1.03	3.08E-03	3.17E-03	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	9.79E-07	4.55E-06	1.12E-05	1.15E-05	3.00E-05	1.24E-05
7439-95-4	Magnesium	53,400	3.08E-03	1.64E+02	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	5.07E-02	2.36E-01	5.83E-01	5.95E-01	1.55E+00	6.43E-01
7439-96-5	Manganese	288	3.08E-03	8.87E-01	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	2.74E-04	1.27E-03	3.14E-03	3.21E-03	8.38E-03	3.47E-03
14797-55-8	Nitrate as Nitrogen	26,400	3.08E-03	8.13E+01	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	2.51E-02	1.17E-01	2.88E-01	2.94E-01	7.68E-01	3.18E-01
7440-09-7	Potassium	6,800	3.08E-03	2.09E+01	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	6.46E-03	3.00E-02	7.42E-02	7.58E-02	1.98E-01	8.18E-02
7782-49-2	Selenium	34.7	3.08E-03	1.07E-01	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	3.30E-05	1.53E-04	3.79E-04	3.87E-04	1.01E-03	4.18E-04
7440-23-5	Sodium	244,000	3.08E-03	7.52E+02	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	2.32E-01	1.08E+00	2.66E+00	2.72E+00	7.10E+00	2.94E+00
7440-24-6	Strontium	1,280	3.08E-03	3.94E+00	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	1.22E-03	5.65E-03	1.40E-02	1.43E-02	3.73E-02	1.54E-02
7440-61-1	Uranium	50.6	3.08E-03	1.56E-01	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	4.81E-05	2.24E-04	5.52E-04	5.64E-04	1.47E-03	6.09E-04
7440-66-6	Zinc	21.5	3.08E-03	6.62E-02	3.24E+03	6.97E+02	2.82E+02	2.76E+02	1.06E+02	2.56E+02	2.04E-05	9.50E-05	2.35E-04	2.40E-04	6.26E-04	2.59E-04

Notes:

^a The mass loading factor being applied to detected chemicals was determined by dividing the air concentration above the pond (as determined using RESRAD-OFFSITE for uranium isotopes) by the corresponding pond sediment concentrations.

^b The maximum air concentration (C_A) of each chemical above the pond was determined using the following equation:

$$C_A \text{ (}\mu\text{g/m}^3\text{)} = C_{SED} \text{ (mg/kg)} \times C_{DUST} \text{ (g/m}^3\text{)} \times CF_{SED} \text{ (1 kg/1000 mg)} \times CF_{CHEM} \text{ (1000 }\mu\text{g/1 mg)}$$

Where: C_{SED} = Chemical concentration in sediment (mg/kg)

C_{DUST} = Dust concentration in Air above pond (g/m³)

CF_{SED} = Mass conversion factor for sediment (kg/mg)

CF_{CHEM} = Mass conversion factor for chemical (µg/mg)

^c Air concentration attenuation factor is calculated by dividing the modeled maximum air concentration above the pond by the modeled maximum air concentration above the offsite location.

^d Offsite air concentrations above each offsite location are calculated to result from releases of pond sediment dust into the air during Alternatives 2 and 3 remedial actions, followed by offsite transport and dispersion. An air concentration for each chemical, above each offsite location, is calculated by dividing the maximum air chemical concentration by the corresponding attenuation factor for the offsite receptor location of interest.

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FATE AND TRANSPORT MODELING OF SEDIMENTS FROM SHIPROCK DISPOSAL SITE EVAPORATION POND

1.0 INTRODUCTION

Contaminant fate and transport evaluation is performed to assess the potential for contaminants to leach from Shiprock disposal site evaporation pond sediments and impact groundwater beneath the sources and downgradient receptor locations. This evaluation is included in the decision-making process to determine whether remedial actions of Evaporation Pond may be necessary to protect groundwater resources.

Computer-based contaminant fate and transport analyses were performed to predict the rate of contaminant migration through the unsaturated soil beneath the pond to groundwater (i.e., transport media) and to conservatively estimate future contaminant concentrations at downgradient receptor locations. Fate and transport modeling was used to simulate vertical transport of contaminants from the pond sediments to groundwater, as well as mixing of leachate with the saturated groundwater system beneath the source area. A summary of contaminant fate and transport analysis is presented in this appendix.

2.0 MODELING APPROACH

The approach to modeling contaminant concentrations in sediment and groundwater at the Shiprock disposal site evaporation pond includes:

1. Performing sediment screening analyses to identify the site-related constituents (SRCs) with the potential to leach to groundwater as contaminant migration (CM) constituents of potential concern (COPCs).
2. Developing the conceptual site model (CSM) for the contaminated sediment, including the flow path direction and characteristics, and receptor locations for evaluating future expected concentrations.
3. Evaluating the sediment contamination data for all the CMCOPC to develop the source terms for leachate modeling using SESOIL.
4. Performing leachate modeling using SESOIL to develop the loading rates (input) for the AT123D model.
5. Performing saturated flow and contaminant transport modeling using AT123D to predict the maximum concentration over time at the downgradient receptor locations based on the loading rates from SESOIL.

3.0 SEDIMENT SCREENING ANALYSIS

Sediment screening analyses are screening evaluations performed to identify the SRCs that has the potential to leach to groundwater as CMCOPCs. Sediment screening process involves excluding all the nutrients (e.g., calcium, potassium, magnesium, etc.) from the list of the SRCs identified in the main report and comparing the maximum concentrations of the remaining SRCs with MCL/RSL-based SSLs. The SSLs were obtained from EPA generic RSL Table (USEPA, 2023a). The SSL is defined as the concentration of a contaminant in soil/sediment that represents a level of contamination below which there is no concern for impacts to groundwater under CERCLA, provided conditions associated with SSLs are met. Generally, if contaminant concentrations in soil/sediment fall below the SSL, and there are no groundwater receptors of

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concern or anticipated exposures, then no further study or action is warranted for that area. If the SSL for a constituent is not available and there is no drinking water MCL or RSL available, then no further evaluation of the constituent is required, and it is eliminated from the list of the CMCOPCs. The list of identified CMCOPCs is shown in Table D-5-1.

4.0 MODELING PARAMETERS

A CSM was developed to define the basis of input parameters required for the contaminant transport modeling using SESOIL (Bonazountas and Wagner, 1984; GSC 1998) and AT123D (Yeh 1981; GSC 1998) models. Groundwater flow from the Shiprock Disposal Site Evaporation Pond is towards north-northeast with an average hydraulic gradient of 0.0025 ft/ft and towards east to the San Juan River with an average hydraulic gradient of 0.0145 ft/ft based on the potentiometric surface map created using the most recent water level measurement data. All the receptor locations for evaluating concentrations are also identified in Figure D-5-1. The receptor locations “R0,” “R1,” and “R2” are defined as follows: R0 is located at the down gradient boundary of the pond; R1 is located at a downgradient residential well (Pumping Well 1093R); and R3 is located at the nearest downgradient surface water body (i.e., San Juan River).

The input data for SESOIL can be grouped into four types: climatic data, chemical data, soil data, and application data. There are a total of 61 separate parameters contained in these four data groups. Site-specific parameter if available, were used for the modeling. Certain parameters, however, were not available for this site, and were estimated based on pertinent scientific literature, geochemical investigations, and checks for consistency between model results and historical data. Conservative estimates were used when a range of values existed or parameter values were not available. The hydrogeologic parameters used in the modeling are presented in Table D-5-2 with references. The chemical parameters and climatic data are presented in Tables D-5-3 and D-5-4, respectively.

Climate Data. The climatic data file of SESOIL consists of an array of mean monthly temperature, mean monthly cloud cover fraction, average monthly relative humidity, average monthly shortwave albedo, average daily evapotranspiration, monthly precipitation, mean number of storm events per month, mean duration of rainfall, and mean length of rainy season. The climatic data utilized for this site is presented in Table D-5-4. This data was taken from the Farmington 4 NE, New Mexico, weather station as it was determined to be most appropriate, corresponding to the latitude and the longitude at Shiprock Site.

Chemical Data. The pollutant fate cycle of SESOIL focuses on the various chemical transport and transformation processes that may occur in the soil zone. These processes include volatilization/diffusion, adsorption/desorption, and cation exchange, biodegradation and hydrolysis, and metal complexation. These parameters were obtained from literature and are presented in Table D-5-3.

Soil Data. The soil data file of SESOIL contains input parameters describing the physical characteristics of the subsurface soil and is presented in Table D-5-2. The parameters include soil bulk density, intrinsic permeability, soil disconnectedness index, soil porosity, fraction organic carbon content, and cation exchange capacity. Site-specific data were used if available otherwise EPA default values were used. There is, however, no measurement method for the soil disconnectedness index or a measured value of the Freundlich exponent. Soil disconnectedness index is a parameter that relates the soil permeability to the moisture content. Thus, SESOIL default values were used for these two parameters.

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An average intrinsic permeability for the vadose zone representing the unconsolidated zone above the water table was assumed based on the soil/sediment and geologic characteristics of the material below the pond and above the water table that produced a percolation rate of 0.55 cm/year (0.21 inches). The soil porosity was set to a default value.

Soil disconnectedness index replaces the moisture retention curves (or characteristic curves) used by other unsaturated zone leaching models. SESOIL User's Guide (Hetrick and Scott, 1993) defines this parameter to be the exponent relating the “wetting” and “drying” time-dependent permeability of soil to its saturated permeability. This “one” variable approach of using soil disconnectedness index in SESOIL simplifies the data estimation process and reduces computational time. In addition, this parameter was calibrated for four different soil types ranging from sandy loam to clay (Hetrick et al., 1986) and the calibrated values fell within the default range specified in the SESOIL User's Guide.

Source Term. Analytical data from sediments collected from the evaporation pond were used as the source term for SESOIL modeling. All the samples were compiled to provide a detailed loading option for the SESOIL model. Statistical analysis was performed using all the sediment sampling data to develop the source terms for SESOIL modeling. The soil exposure concentrations (i.e., 95% upper confidence limit [UCL] or the maximum if the maximum is less than the UCL) for each CMCOPCs were used as the source terms for SESOIL modeling. The source terms are presented in Table D-5-5.

Application Data. The model was arranged in 4 layers. The first layer forms the loading zone and corresponds to the maximum depth of sediment contamination; thus, it was 0.3 m (1 ft) thick. The second and third layers, each 3.35 m (11 ft) thick, form the leaching zone and corresponds to the maximum depth above the water table. An additional (i.e., the 4th) thin layer (0.1 m thick) was included just above the water table to read output results at the water table/vadose zone interface.

AT123D Model Parameters. The hydrogeologic parameter values used by the AT123D model are shown in Table D-5-2. The chemical-specific parameters include the K_d values and molecular diffusion coefficient in water. The K_d values for the CMCOPCs are presented in Table D-5-3. The molecular diffusion, a component of hydrodynamic dispersion is generally provided to be $1.0E-06$ cm²/sec for metals and ions (Mills et al., 1985).

5.0 FATE AND TRANSPORT MODELING

Contaminant fate and transport modeling is performed for CMCOPCs identified in Table D-5-1 based on the CEM for the site in Section D.3.0, as discussed in Section D.4.0. Seasonal Soil Compartment (SESOIL) modeling was performed for chemicals identified as the CMCOPCs from the soil screening analyses presented in the previous section summarized in Table D-5-1. The SESOIL modeling was performed to predict concentrations of CMCOPCs in the leachate immediately beneath the source (Pond) and just above the water table. If the predicted leachate concentration of a CMCOPC exceeded its MCL/RSL, then the Analytical Transient 1-,2-,3-Dimensional (AT123D) model was performed to predict the groundwater concentrations directly beneath the source and at downgradient designated receptor locations (previously discussed).

SESOIL is a one-dimensional (1-D), vertical transport, screening-level model for the unsaturated (vadose) zone. It simulates contaminant transport and fate based on diffusion, adsorption, volatilization, decay, and hydrolysis. SESOIL was used to simulate the vertical transport of leachate from the source area down through the vadose zone to the water table. SESOIL

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simulation for a contaminant was performed over a 1,000-year period. Because, EPA suggests a screening value of 1,000 years to be used due to the high uncertainty associated with predicting conditions beyond that timeframe, therefore 1,000 year was selected for the period of simulation. The results from SESOIL were entered as input to the AT123D model. AT123D simulates contaminant transport in an aquifer under 1-D groundwater flow. Flow and transport processes simulated include advection, dispersion, diffusion, adsorption/retardation, and decay. AT123D simulation was performed until the concentration at the receptor location had peaked or a maximum simulation time of 1,000 years.

6.0 MODEL APPLICATION AND RESULTS

Contaminant transport includes the movement of water and dissolved materials from the source areas to groundwater. This occurs as water in the Evaporation Pond infiltrates from the surface and percolates through the contaminated sediments, and into the saturated zone. The downward movement of water driven by gravitational potential, capillary pressure, and other components of total fluid potential, mobilizes the contaminants and carries them through the soil into the mixing zone with the water table. Lateral transport within the saturated zone is controlled by the groundwater gradient. Vertical transport (evaluated with the SESOIL model) through the unsaturated zone to the water table, and horizontal transport (evaluated with the AT123D model) through the saturated zone to downgradient receptor locations (Figure D-5-1).

The output of the contaminant fate and transport modeling is presented as the expected maximum concentration of modeled contaminants at the selected receptor locations. For SESOIL, the receptor location is the groundwater table beneath the source area. The predicted maximum leachate concentration just above the water table, observed in the SESOIL results, was compared against MCL/RSL. If the predicted maximum leachate concentration of a CMCOPC was higher than the MCL/RSL, the CMCOPC was further evaluated using the AT123D model to predict future maximum concentrations in groundwater beneath the source, as well as at the receptor locations. The predicted maximum concentration in groundwater directly below the source areas and at the receptor locations, observed in the AT123D modeling results, was compared against the MCL/RSL. If the predicted maximum concentration of a CMCOPC was higher than the MCL/RSL, the chemical is identified as a CMCO. Summary of SESOIL and AT123D modeling results are presented in Table D-5-5. As can be seen in the table, SESOIL predicted maximum leachate concentrations beneath the source and above the water table and comparisons with groundwater screening criteria. Of the modeled parameters, only nitrate and chloride in leachate exceeded the groundwater screening criteria; therefore, these two CMCOPCs were selected for lateral transport modeling in the saturated zone using AT123D. The remaining CMCOPCs were not considered for any further evaluation. The results of AT123D modeling shown in the table (Table D-5-5) indicate that of the two CMCOPCs, only nitrate is expected to exceed the groundwater criterion at all the receptor locations (i.e. R0, R1, and R2). The concentrations of chloride predicted at all receptor locations are predicted to be below the groundwater screening criterion.

Figure D-5-2 shows predicted groundwater concentrations of nitrate at the receptor locations (i.e., R0, R1 and R2) compared with the corresponding EPA MCL in groundwater. The maximum predicted groundwater concentrations of 208 mg/L at R0, 198 mg/L at R1 and 37.1 mg/L at R2 exceed the MCL (10 mg/L). Similarly, Figure D-5-3 shows predicted groundwater concentrations of chloride at all the receptor locations (i.e., R0, R1 and R2) compared with its MCL in groundwater, and the maximum predicted groundwater concentrations of 166 mg/L at

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R0, 163 mg/L at R1 and 26.5 mg/L at R2 are much above its MCL (1 mg/L). Therefore, it may be concluded that the concentrations of sediment observed in the evaporation pond are expected to pose a threat to groundwater contamination if no action is taken, with nitrate being identified as the contaminant migration chemical of concern (CMCOC). As such, nitrate is retained for further quantitative evaluations of human health impacts.

7.0 LIMITATIONS/ASSUMPTIONS

A conservative modeling approach was used, which might have overestimated the contaminant concentration in the leachate for migration from observed sediment concentrations and the corresponding concentration in the groundwater. Listed below are some of the important assumptions used in this analysis:

- The use of K_d and retardation factor (R_d) to describe the reaction term of the transport equation assumes that an equilibrium relationship exists between the solid- and solution-phase concentrations of the contaminant and that the relationship is linear and reversible.
- The K_d -values used in this analysis for all the CMCOPCs represents literature values and may not represent actual site conditions.
- Flow and transport in the vadose zone is 1-D (i.e., only in the vertical direction).
- Initial condition is disregarded in the vadose zone modeling.
- Flow and transport are not affected by density variations.
- The effects of heterogeneity and anisotropy are not addressed in these simulations.

8.0 SUMMARY AND CONCLUSIONS

Summary and conclusions of the sediment screening, and leachate and groundwater modeling are as follows:

- Arsenic, manganese, selenium, strontium, uranium, nitrate and chloride among the inorganics and uranium-233/234, uranium-235/236 and uranium-238 among the radionuclides were identified as CMCOPCs based on soil screening analysis (Table D-5-1).
- Based on the results of the SESOIL modeling (Table D-5-4), the maximum concentrations for nitrate and chloride in leachate directly below the source and above the water table were above their respective screening criteria. Therefore, AT123D modeling was required to predict the maximum concentration of these two CMCOPCs in groundwater after mixing with the leachate.
- AT123D model predicted maximum concentrations of nitrate in groundwater at the three receptor source locations that exceed the corresponding screening criterion. The predicted concentrations of chloride at all receptor locations are less than the respective groundwater screening criterion. From this evaluation, it may be concluded that without any remedial action, the contaminated sediments at the Shiprock Disposal Site Evaporation Pond are expected to cause groundwater problem, with nitrate being identified as the CMCOC. As such, nitrate is retained for further quantitative evaluations of human health impacts in this EA.

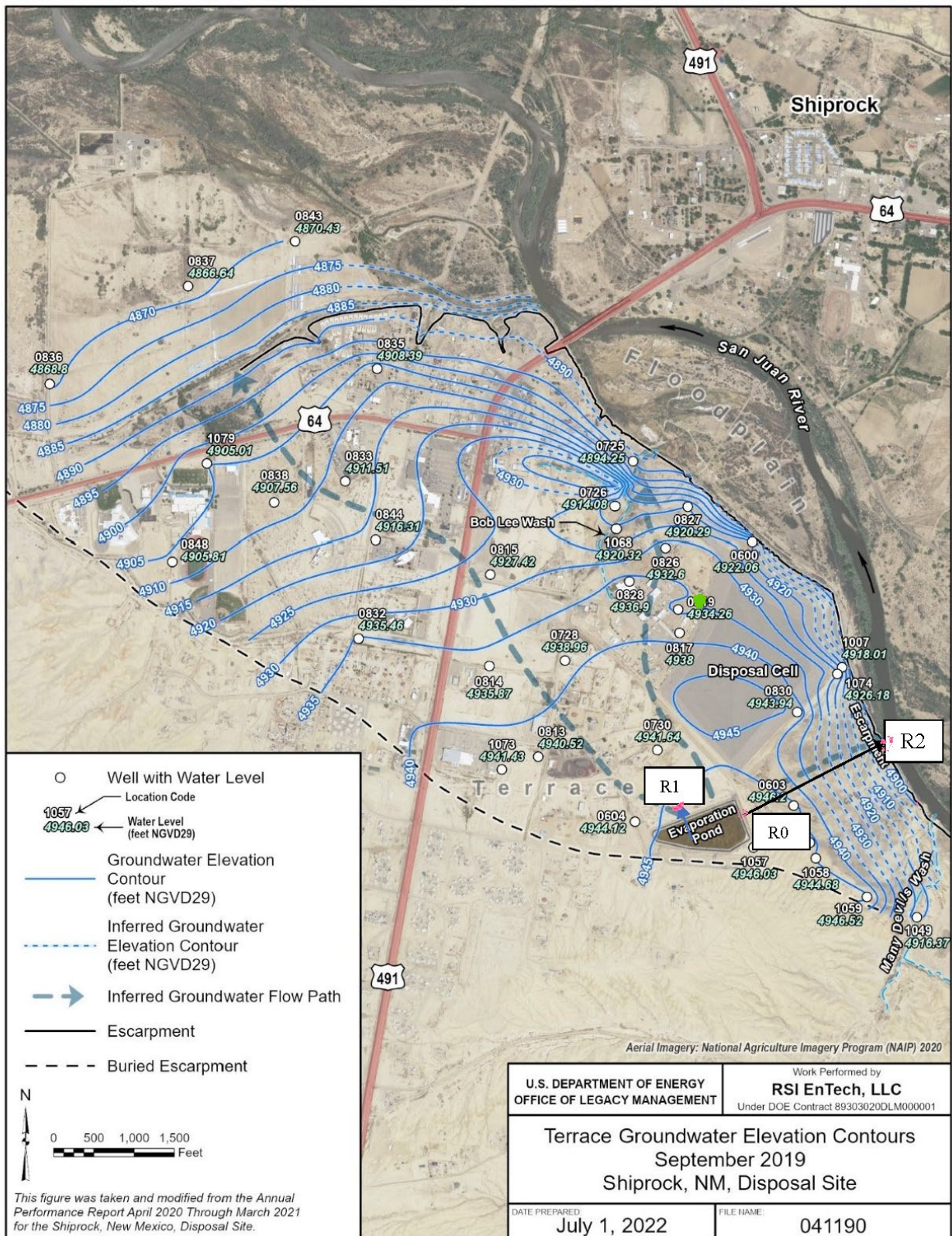


Figure D-5-1. Potentiometric surface and selected receptor locations (R0, R1, R2) for evaluating impact to groundwater based on leaching from contaminated sediment in the pond.

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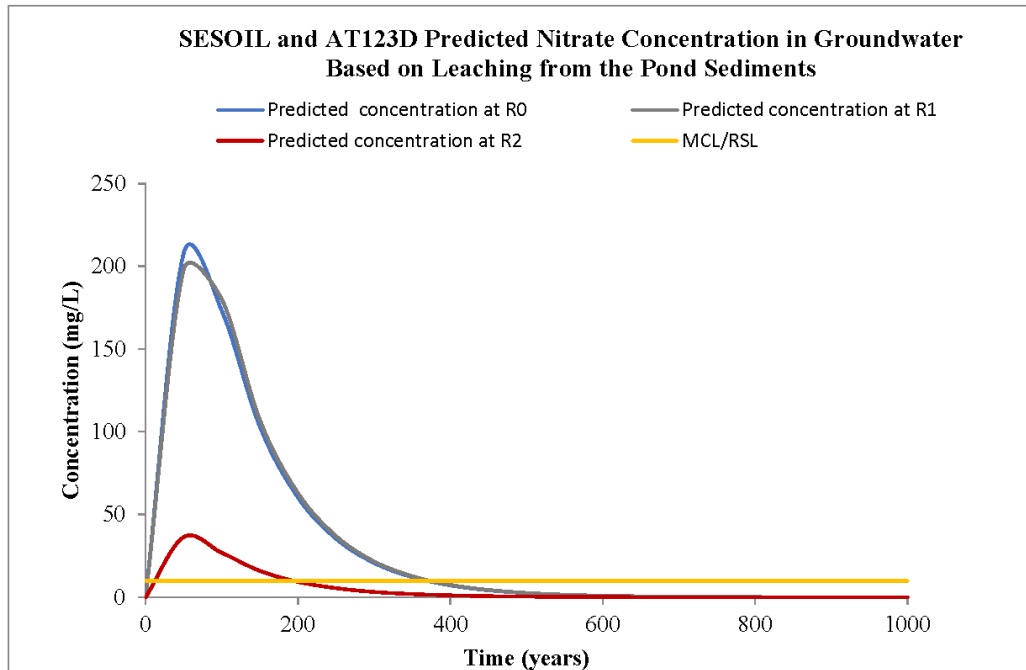


Figure D-5-2. SESOIL and AT123D-predicted concentration of nitrate in groundwater based on observed sediment concentrations in the evaporation pond.

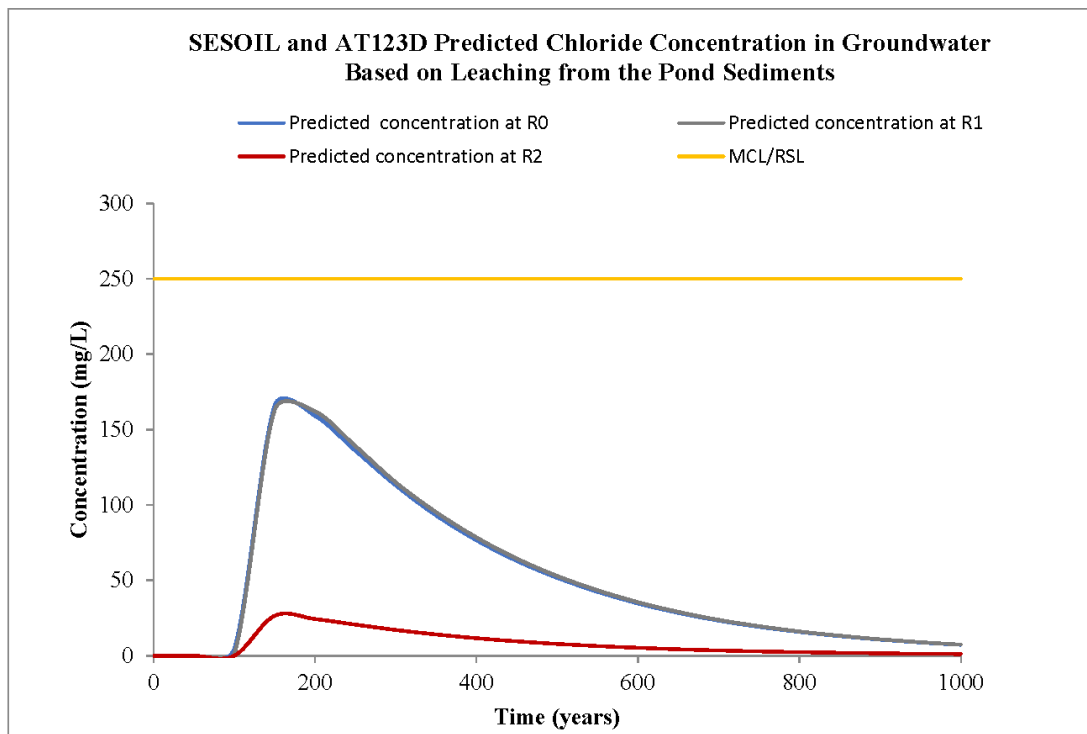


Figure D-5-3. SESOIL and AT123D-predicted concentration of chloride in groundwater based on observed sediment concentrations in the evaporation pond.

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Table D-5-1. Identified CMCOPCs Based on Sediment Screening Analysis for Shiprock Disposal Site Evaporation Pond^a

SRC	CAS Number	Maximum Detected Concentration in Sediment (mg/kg)	SSL (mg/kg)	SSL Type	Initial CMCOPC (Yes/No)	Detection Frequency	Sample ID at Maximum Concentration
<i>Metals and ions</i>							
Arsenic	7440-38-2	0.688	0.29	MCL	Yes	1/ 12	SHP02-02.2301003-012
Barium	7440-39-3	19.7	82	MCL	No	12/ 12	SHP02-02.2301003-012
Cadmium	7440-43-9	0.0633	0.38	MCL	No	1/ 12	SHP02-02.2301003-012
Lead	7439-92-1	1.03	14	MCL	No	5/ 12	SHP02-02.2301003-012
Manganese	7439-96-5	288	28	Risk	Yes	12/ 12	SHP02-02.2301003-012
Selenium	7782-49-2	34.7	0.26	MCL	Yes	12/ 12	SHP02-02.2301003-002
Strontium	7440-24-6	1,280	420	Risk	Yes	12/ 12	SHP02-02.2301003-004
Uranium	7440-61-1	50.6	14	MCL	Yes	12/ 12	SHP02-02.2301003-011
Zinc	7440-66-6	21.5	370	Risk	No	12/ 12	SHP02-02.2301003-012
Chloride	16887-00-6	51,400	NA	-	Yes	12/ 12	SHP02-02.2301003-007
Nitrate	14797-65-0	26,400	NA	-	Yes	12/ 12	SHP02-02.2301003-007
Sulfate*	14808-79-8	590,000	NA	-	No	12/ 12	SHP02-02.2301003-011
<i>Radionuclides (concentrations in pCi/g)</i>							
Uranium-233/234	11-08-5	19.2	0.00584	Risk	Yes	12/ 12	SHP02-02.2301003-003
Uranium-235/236		1.12	0.00434	Risk	Yes	11/ 12	SHP02-02.2301003-011 / - 012
Uranium-238	7440-61-1	17.1	0.00297	Risk	Yes	12/ 12	SHP02-02.2301003-003

^aAll the nutrients (e.g., magnesium, potassium, calcium, etc.) are excluded from any contaminant fate and transport analysis.

* Sulfate does not have an MCL or SSL, therefore it was not identified as a CMCOPC.

CAS = Chemical Abstract Service.

CMCOPC = Contaminant Migration Chemical of Potential Concern.

SSL = Soil Screening Level.

MCL = Maximum Contaminant Level.

mg/kg = Milligrams per kilogram.

SRC = Site-related Contaminant.

Bold = SRCs that exceed the SSL.

pCi/g = picocuries per gram

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Table D-5-2. Hydrogeologic Parameters Used in SESOIL and AT123D Modeling for Shiprock Disposal Site Evaporation Pond Sediments

Parameters	Symbol	Units	Value	Source for Value
<i>SESOIL</i>				
Percolation Rate (recharge rate)	q	cm/year	5.45E-01	Estimated by SESOIL model based on Climatic data from Farmington 4 NE, New Mexico
Horizontal Area of Aggregate	A _p	m ²	11	Acre
Intrinsic Permeability (silty sand)	p	cm ²	1.00E-10	Assumed permeability based soil characteristics
Disconnectedness Index	c	Unitless	10	Assumed based on SESOIL model
Freundlich Equation Exponent	n	Unitless	1	SESOIL default
Fraction Organic Carbon	f _{oc}	Unitless	2.00E-03	EPA default
Bulk Density	ρ _b	kg/L	1.5	EPA default
Porosity (total)	φ _T	Unitless	0.35	EPA default
Vadose Zone Thickness	V _z	m	7.2	Based on 2019 water table surface
<i>AT123D</i>				
Aquifer Thickness	h	M	20	Site characterization
Hydraulic Conductivity in Saturated Zone	K _s	m/hr	2.79E-01	AT123D calibrated value
Hydraulic Gradient in Saturated Zone ^a	I _s	m/m	0.0025 and 0.0145	Based on 2019 potentiometric surface map
Effective Porosity	n _e	unitless	0.2	Mills et al. 1985
Distance to boundary of the pond (Receptor, R0)	R0	m	0.0	At the downgradient boundary of the pond.
Distance to Downgradient Well (Receptor, R1)	R1	m	50	Based on nearest downgradient pumping well.
Distance to downgradient surface water (Receptor, R2)	R2	m	610	Downgradient distance to the San Juan River
Dispersivity (longitudinal)	a _L	m	30	Assumed
Dispersivity (transverse)	a _T	m	3	0.1 a _L
Dispersivity (vertical)	a _v	m	0.3	0.01 a _L

AT123D = Analytical Transient 1-,2-,3-Dimensional (model).

EPA = U. S. Environmental Protection Agency.

SESOIL = Seasonal Soil Compartment (model).

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Table D-5-3. Chemical Parameters Used in SESOIL and AT123D Modeling for Shiprock Disposal Site Evaporation Pond Sediments

SRC	K _d (L/kg)	Reference	C _w (mg/L Or pCi/L)	C _w Type	SSL (mg/kg Or pCi/g)	Reference	SSL Type
<i>Inorganics</i>							
Arsenic	2.90E+01	a	1.00E-02	MCL	2.90E-01	a	MCL
Barium	4.10E+01	a	2.00E+00	MCL	8.20E+01	a	MCL
Cadmium	7.50E+01	a	5.00E-03	MCL	3.80E-01	a	MCL
Lead	9.00E+02	a	1.50E-02	MCL	1.40E+01	a	MCL
Manganese	6.50E+01	a	4.36E-01	RSL	2.80E+01	a	RSL
Selenium	5.00E+00	a	5.00E-02	MCL	2.60E-01	a	MCL
Strontium	3.50E+00	a	12	RSL	4.20E+02	a	RSL
Uranium	4.50E+01	a	3.00E-02	MCL	1.40E+01	a	MCL
Zinc	6.20E+01	a	6.00E+00	RSL	3.70E+02	a	RSL
Chloride	2.50E-01	a	1.00E+00	MCL	NA		
Nitrate	1.00E-02	b	1.00E+01	MCL	NA		
Sulfate	NA		NA		NA		
<i>Radionuclides</i>							
Uranium-234	4.50E+01	a	1.50E+01	MCL	8.00E-01	a	RSL
Uranium-235	4.50E+01	a	1.50E+01	MCL	1.40E-01	a	MCL
Uranium-238	4.50E+01	a	1.50E+01	MCL	3.70E+02	a	RSL

^aU.S. Environmental Protection Agency regional screening level generic tables May 2023; found at:
<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>

^bPacific Northwest National Laboratory, 2007. "K_d Values for Agricultural and Surface Soils for Use in Hanford Site Farm, Residential, and River Shoreline Scenarios," PNNL-16531

C_w = Target groundwater concentration (either MCL or RSL).

pCi/L = Picocuries per liter.

K_d = Distribution coefficient.

L/kg = Liters per Kilogram.

MCL = Clean Water Act Drinking Water Maximum Contaminant Level.

mg/L = Milligrams per liter.

NA = Not Available.

RSL = USEPA Regional Screening Level (USEPA 2023).

SRC = Site-related Contaminant.

SSL = Soil Screening Level.

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Table D-5-4. Climatic Data from SESOIL for Shiprock Disposal Site Evaporation Pond based on Farmington 4 NE, New Mexico Weather Station

Month	Air Temp (° C)	Cloud Cover	Humidity	ALBEDO	Evapotranspiration ^a (cm/day)	Precipitation (cm)	Duration (day)	Storms per Month	Model Days in Month
October	11.06	0.40	0.45	0.25	0	2.49	0.325417	2.17	30.4
November	3.61	0.40	0.55	0.26	0	1.11	0.244167	1.31	30.4
December	-1.28	0.50	0.60	0.27	0	1.74	0.362083	1.31	30.4
January	-2.22	0.60	0.75	0.28	0	1.44	0.3175	1.72	30.4
February	0.67	0.55	0.65	0.27	0	1.03	0.266667	1.37	30.4
March	3.72	0.50	0.55	0.27	0	1.17	0.23875	1.07	30.4
April	8.83	0.50	0.45	0.26	0	1.27	0.31375	1.14	30.4
May	13.89	0.45	0.35	0.25	0	0.7	0.18375	0.86	30.4
June	18.83	0.40	0.35	0.25	0	0.95	0.140417	1.07	30.4
July	22.28	0.50	0.50	0.25	0	2.01	0.195417	2.17	30.4
August	21.11	0.30	0.55	0.25	0	2.24	0.225833	2.35	30.4
September	17.17	0.30	0.55	0.25	0	1.9	0.251667	1.6	30.4

^a Data calculated in SESOIL model. 0.00 indicates evapotranspiration is calculated from other climatic data.

SESOIL = Seasonal Soil Compartment model.

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Table D-5-5. Summary of SESOIL and AT123D Modeling Results based on leaching from the contaminated sediments at Shiprock Disposal Site Evaporation Pond

CMCOPC	SESOIL Source Term Concentration (mg/kg or pCi/g)	SESOIL- Predicted Maximum Concentration in Leachate $C_{L,MAX}$ (mg/L or pCi/L)	SESOIL- Predicted Time of Maximum Concentration (years)	AT123D- Predicted $C_{max,R0}$ in Groundwater at Receptor R0 (mg/L or pCi/L)	AT123D- Predicted $C_{max,R1}$ in Groundwater at Receptor R1 (mg/L or pCi/L)	AT123D- Predicted $C_{max,R2}$ in Groundwater at Receptor R2 (mg/L or pCi/L)	AT123D- Predicted Time of Maximum Concentration (years)	MCL/ RSL (mg/L or pCi/L)	CMCOC?
<i>Metals</i>									
Arsenic	6.90E-01	0.00E+00	>1000	NA	NA	NA	NA	1.00E-02 ^a	No
Manganese	1.63E+02	0.00E+00	>1000	NA	NA	NA	NA	4.30E-02 ^b	No
Selenium	2.92E+01	0.00E+00	>1000	NA	NA	NA	NA	5.00E-02 ^a	No
Strontium	7.37E+02	0.00E+00	>1000	NA	NA	NA	NA	1.20E+00 ^b	No
Uranium	3.90E+01	0.00E+00	>1000	NA	NA	NA	NA	3.00E-02 ^a	No
<i>Nitrate & Chloride</i>									
Nitrate	2.E+04	1.42E+04	51	2.08E+02	1.98E+02	3.71E+01	6.00E+01	1.00E+01^a	Yes
Chloride	4.E+04	9.38E+03	140	1.66E+02	1.63E+02	2.65E+01	1.50E+02	2.50E+02^c	No
<i>Radionuclides</i>									
U-234	1.49E+01	0.00E+00	>1000	NA	NA	NA	NA	1.50E+01 ^d	No
U-235	9.60E-01	0.00E+00	>1000	NA	NA	NA	NA	1.50E+01 ^d	No
U-238	1.31E+01	0.00E+00	>1000	NA	NA	NA	NA	1.50E+01 ^d	No

Key: R0 = Receptor location at downgradient boundary of the site (evaporation pond); R1 = Receptor location at nearest downgradient well; R2 = Receptor location at the nearest downgradient surface water body (i.e., San Juan River) AT123D = Analytical Transient 1-, 2-, 3-Dimensional (model); CMCOPC = Contaminant migration chemical of potential concern; CMCOC = Contaminant migration chemical of concern; $C_{L,max}$ = Predicted maximum leachate concentration beneath the pond just above the water table $C_{max,R1}$ = Predicted maximum concentration in Groundwater at Receptor R1; $C_{max,R2}$ = Predicted maximum concentration in Groundwater at Receptor R2 MCL = Maximum contaminant level; pCi/L = Picocuries per liter; mg/L = milligram per liter; NA = Not applicable; RSL = Regional screening level; SESOIL = Seasonal Soil Compartment (model).

^a EPA MCL (EPA 2023a).

^b EPA Tap water RSL targeting a noncancer hazard quotient of 0.1 (EPA 2023a).

^c No primary EPA MCL or tap water RSL is available for chloride; therefore, the secondary MCL is applied (EPA 2020).

^d EPA MCL for gross alpha activity in drinking water (EPA 2020).

Bold = CMCOPCs that exceed the groundwater criteria

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ATTACHMENT D-6

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Table D-6-1. Groundwater Evaporation Pond Sediment Data Comparisons with Risk-Based Screening Levels for Onsite Receptor Scenarios and Regulatory Limits, Shiprock, New Mexico, Disposal Site

CAS Number	Detected Parameter	Units	Maximum Detected Concentration	Radiological Screening Levels ^a						Chemical Screening Levels ^b						
				Onsite Worker ^c	Pond Remediation Worker ^d	Onsite Trespasser ^e	Resident Farmer ^f	Soil to Groundwater ^g		Onsite Worker ^c	Pond Remediation Worker ^d	Onsite Trespasser ^e	Resident Farmer ^f	Soil to Groundwater ^g		Hazardous Waste Regulatory Limits
								Risk-Based	MCL-Based					Risk-Based	MCL-Based	
Radiological Parameters																
12587-46-1	Gross Alpha	pCi/g	4.20E+01	---	---	---		---	---	---	---	---	---	---	---	---
12587-47-2	Gross Beta	pCi/g	5.17E+01	---	---	---		---	---	---	---	---	---	---	---	---
11-08-5	Uranium-233/234 ^h	pCi/g	1.92E+01	3.42E-02 c	4.09E-01 c	2.80E+01 c	5.76E-06 c	2.40E-05 c	5.84E-03	---	---	---	---	---	---	---
U-235+236	Uranium-235/236 ^h	pCi/g	1.12E+00	7.31E-02 c	4.33E-01 c	6.32E+00 c	4.61E-06 c	9.52E-06 c	4.34E-03	---	---	---	---	---	---	---
7440-61-1	Uranium-238	pCi/g	1.71E+01	2.00E-02 c	4.81E-01 c	3.10E+01 c	2.56E-06 c	1.97E-04 c	2.97E-03	---	---	---	---	---	---	---
Metals																
7440-38-2	Arsenic	mg/kg	6.88E-01	---	---	---		---	---	3.00E+00 c	7.12E+00 c	3.16E+00 c	9.79E-03 c	1.50E-03 c	2.90E-01	---
7440-39-3	Barium	mg/kg	1.97E+01	---	---	---		---	---	2.20E+04 n	1.80E+03 n	2.40E+04 n	4.55E+01 n	1.60E+01 n	8.20E+01	---
7440-43-9	Cadmium	mg/kg	6.33E-02	---	---	---		---	---	1.00E+01 n	1.45E+01 n	1.08E+01 n	7.42E-03 n	1.40E-02 n	3.80E-01	---
7440-70-2	Calcium	mg/kg	8.87E+04	---	---	---		---	---							
7439-92-1	Lead	mg/kg	1.03E+00	---	---	---		---	---	8.00E+02	8.00E+02	3.82E+02	1.73E+00	---	1.40E+01	---
7439-95-4	Magnesium	mg/kg	5.34E+04	---	---	---		---	---	---	---	---	---	---	---	---
7439-96-5	Manganese	mg/kg	2.88E+02	---	---	---		---	---	2.60E+03 n	2.37E+01 n	2.88E+03 n	2.00E+01 n	2.80E+00 n	---	---
7440-09-7	Potassium	mg/kg	6.80E+03	---	---	---		---	---	---	---	---	---	---	---	---
7782-49-2	Selenium	mg/kg	3.47E+01	---	---	---		---	---	5.80E+02 n	1.67E+02 n	6.03E+02 n	6.03E-01 n	5.20E-02 n	2.60E-01	---
7440-23-5	Sodium	mg/kg	2.44E+05	---	---	---		---	---	---	---	---	---	---	---	---
7440-24-6	Strontium	mg/kg	1.28E+03	---	---	---		---	---	7.00E+04 n	6.79E+04 n	7.23E+04 n	9.37E+00 n	4.20E+01 n	---	---
7440-61-1	Uranium ⁱ	mg/kg	5.06E+01	---	---	---		---	---	2.30E+01 n	5.96E+00 n	2.41E+01 n	1.00E-01 n	1.80E-01 n	1.40E+01	---
7440-66-6	Zinc	mg/kg	2.15E+01	---	---	---		---	---	3.50E+04 n	1.02E+04 n	3.62E+04 n	5.14E+00 n	3.70E+01 n	---	---
General Chemistry Parameters																
16887-00-6	Chloride	mg/kg	5.14E+04	---	---	---		---	---	---	---	---	---	---	---	---
14797-55-8	Nitrate as Nitrogen	mg/kg	2.64E+04	---	---	---		---	---	1.95E+05 n	1.36E+05 n	1.93E+05 n	1.36E+05 n	---	---	---
14808-79-8	Sulfate	mg/kg	5.90E+05	---	---	---		---	---	---		---	---	---	---	---
Hazardous Waste Characteristics Parameters ^j																
7440-39-3	TCLP Barium	mg/L	7.67E-02	---	---	---		---	---	---	---	---	---	---	---	1.00E+02
7440-43-9	TCLP Cadmium	mg/L	1.23E-02	---	---	---		---	---	---	---	---	---	---	---	1.00E+00
7440-47-3	TCLP Chromium	mg/L	1.49E-02	---	---	---		---	---	---	---	---	---	---	---	5.00E+00
7782-49-2	TCLP Selenium	mg/L	1.75E+00	---	---	---		---	---	---	---	---	---	---	---	1.00E+00
7440-22-4	TCLP Silver	mg/L	2.02E-02	---	---	---		---	---	---	---	---	---	---	---	5.00E+00

Notes:

^a Radiological screening levels are based on carcinogenic (c) effects as indicated. Screening levels were first obtained directly from EPA's online generic radiological Preliminary Remedition Goals (PRG) tables, if available, at <https://epa-prgs.ornl.gov/radionuclides/download.html> (EPA, 2022a). If the generic screening levels were not available, then they were calculated using Oak Ridge National Laboratory's (ORNL) online Risk Assessment Information System (RAIS) calculator available at <https://rais.ornl.gov/> (ORNL, 2023). All radiological screening levels target EPA's lower limit (1E-06) of the acceptable risk range (1E-06 to 1E-04).

^b Chemical screening levels are based on the lower of screening levels for carcinogenic (c) effects versus noncarcinogenic effects (n) as indicated. Screening levels were first obtained directly from EPA's online generic Regional Screening Levels (RSL) tables, if available, at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (EPA, 2023a). If the generic screening levels were not available, then they were calculated using Oak Ridge National Laboratory's (ORNL) online Risk Assessment Information System (RAIS) calculator available at <https://rais.ornl.gov/> (ORNL, 2023). Screening levels for carcinogenic chemicals target EPA's lower limit (1E-06) of the acceptable risk range (1E-06 to 1E-04). Screening levels for noncarcinogenic chemicals target EPA's hazard quotient (HQ) of 0.1.

^c Radiological screening levels obtained for the site worker were obtained from EPA's generic PRG tables for industrial soil, assuming a composite worker (EPA, 2022a). Chemical screening levels for the site worker were obtained from EPA's generic RSL tables for industrial soil (EPA, 2023a).

^d Remediation worker screening levels for both radionuclides and chemicals were derived using the online construction worker calculator on ORNL's RAIS website (ORNL, 2023).

^e Trespasser screening levels for both radionuclides and chemicals were derived using the online recreator calculator on ORNL's RAIS website (ORNL, 2023).

^f Screening of sediment data for the resident farmer scenario is to determine if detected radionuclides and chemicals are to be evaluated as COPCs for analysis of air transport to offsite locations. Radiological screening levels obtained for the resident farmer were obtained from EPA's generic PRG tables for resident farmer soil (EPA, 2022a). Chemical screening levels for the resident farmer were calculated Tables in B-2-7 and B-8 using the online calculator on ORNL's RAIS website (ORNL, 2023). The following pathways are included in the chemical screening level calculations: soil ingestion, dermal contact, and inhalation of resuspended dusts, along with the consumption of homegrown produce, dairy, and beef impacted by soil deposition. Groundwater is not included in the chemical screening level for the farmer but rather, is covered by the soil to groundwater screening levels.

^g Radiological soil to groundwater screening levels, based on protection of the risk-based tap water PRG and the MCL in groundwater, were obtained from EPA's generic radiological PRG tables (EPA, 2022a). Chemical soil to groundwater screening levels, based on protection of the risk-based tap water RSL and the MCL in groundwater, were obtained from EPA's generic RSL tables (EPA, 2023a).

^h The radiological screening levels presented for uranium-233/234 and uranium-235/236 are the uranium-234 and uranium-235 screening levels, respectively.

ⁱ The screening levels for uranium is for uranium as soluble salts.

^j TCLP regulatory limits are from 40 CFR 261.24 ("Toxicity Characteristic").

"---" Indicates that the screening level is not available or not applicable.

Screening levels in bold font are exceeded by the corresponding maximum sediment concentration detected in the evaporation pond.

Table D-6-2. Groundwater Evaporation Pond Surface Water Data Comparisons with Risk-Based Screening Levels for the Onsite Trespasser Scenario, Shiprock, New Mexico, Disposal Site

CAS Number	Detected Parameter	Units	Maximum Detected Concentration	EPC	Risk-Based Screening Levels ^a	
					Radiological	Chemical
Radionuclides						
7440-29-1	Thorium-232	pCi/L	2.03E+00	2.03E+00	7.53E+01	---
11-08-5	Uranium-233/234 ^b	pCi/L	2.46E+03	2.46E+03	1.08E+02	---
U-235+236	Uranium-235/236 ^b	pCi/L	1.63E+02	1.63E+02	1.09E+02	---
U-238	Uranium-238	pCi/L	2.20E+03	2.20E+03	1.19E+02	---
Metals						
7440-38-2	Arsenic	mg/L	2.50E-01	2.50E-01	---	4.56E-03
7440-39-3	Barium	mg/L	1.21E-01	1.21E-01	---	2.32E+01
7440-42-8	Boron	mg/L	2.37E+01	2.37E+01	---	5.08E+01
7440-43-9	Cadmium	mg/L	3.20E-04	3.20E-04	---	9.38E-03
7440-70-2	Calcium	mg/L	8.20E+02	5.16E+02	---	---
16887-00-6	Chloride	mg/L	3.70E+04	1.46E+04	---	---
7440-50-8	Copper	mg/L	4.00E-03	4.00E-03	---	1.02E+01
7439-89-6	Iron	mg/L	9.10E+00	9.10E+00	---	1.78E+02
7439-95-4	Magnesium	mg/L	3.35E+04	1.96E+04	---	---
7439-96-5	Manganese	mg/L	8.50E+00	3.42E+00	---	1.93E+00
7440-02-0	Nickel	mg/L	7.26E-02	7.26E-02	---	3.74E+00
7440-09-7	Potassium	mg/L	7.30E+03	3.21E+03	---	---
7782-49-2	Selenium	mg/L	2.20E+01	1.22E+01	---	1.27E+00
7440-23-5	Sodium	mg/L	8.03E+04	4.75E+04	---	---
7440-24-6	Strontium	mg/L	2.02E+01	1.69E+01	---	1.52E+02
7440-28-0	Thallium ^c	mg/L	3.82E-02	3.82E-02	---	2.54E-03
7440-61-1	Uranium ^d	mg/L	3.10E+01	1.59E+01	---	5.08E-02
7440-66-6	Zinc	mg/L	2.46E-01	2.46E-01	---	7.91E+01
General Chemistry/Field Measurments						
7664-41-7	Ammonia Total as N	mg/L	5.55E+01	2.89E+01	---	---
7664-41-7	Ammonia Un-ionized as NH3	mg/L	1.00E+01	1.00E+01	---	---
16984-48-8	Fluoride	mg/L	2.42E+01	2.42E+01	---	1.02E+01
E701177	Nitrate + Nitrite as Nitrogen	mg/L	1.90E+04	8.22E+03	---	---
14808-79-8	Sulfate	mg/L	2.84E+05	1.59E+05	---	---
7782-50-5	Total Residual Chlorine	mg/L	6.00E-02	6.00E-02	---	---
Other						
7631-86-9	Silica	mg/L	9.37E+01	9.37E+01	---	---

Notes:

^a Risk-based radiological and chemical screening levels for trespasser exposures to surface water were calculated using Oak Ridge National Laboratory's (ORNL) online recreator calculator on the Risk Assessment Information System website: <https://rais.ornl.gov/index.html> (ORNL, 2023). Screening levels for radionuclides and carcinogenic chemicals are calculated based on a target a cancer risk level of 1E-06. Screening levels for noncarcinogenic chemicals are calculated based on a target hazard quotient (HQ) of 0.1. For chemicals associated with both carcinogenic and noncarcinogenic effects, the lower of the carcinogenic and noncarcinogenic values is used for data screening.

^b The radiological screening levels presented for uranium-233/234 and uranium-235/236 are the uranium-234 and uranium-235 screening levels, respectively.

^c The screening level for thallium is calculated for thallium as soluble salts.

^d The screening level for uranium is calculated for uranium as soluble salts.

"---" Indicates PRG screening level is not applicable to parameter or is not available.

Screening levels in bold font are exceeded by the corresponding maximum surface water concentration detected in the evaporation pond.

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ATTACHMENT D-7

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Table D-7-1. Risk-Based Screening Level Comparisons with Predicted Offsite Air Concentrations from Pond Dust Releases to the Air under Alternative 1, Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Residential Air Screening Levels (µg/m ³) ^a	Predicted Air Concentration of Chemical Above Offsite Location (µg/m ³) ^b						Does Predicted Air Concentration of Chemical Above Offsite Location Exceed the Screening Level? (Yes/No)					
			Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	6.50E-04 c	2.75E-11	1.27E-10	3.16E-10	3.22E-10	8.39E-10	3.48E-10	No	No	No	No	No	No
7440-43-9	Cadmium	1.00E-04 n	2.53E-12	1.17E-11	2.91E-11	2.96E-11	7.72E-11	3.20E-11	No	No	No	No	No	No
7440-70-2	Calcium	NA	3.54E-06	1.64E-05	4.07E-05	4.15E-05	1.08E-04	4.48E-05	NA					
7439-92-1	Lead	1.50E-01	4.11E-11	1.91E-10	4.73E-10	4.82E-10	1.26E-09	5.21E-10	No	No	No	No	No	No
7439-95-4	Magnesium	NA	2.13E-06	9.89E-06	2.45E-05	2.50E-05	6.51E-05	2.70E-05	NA					
7439-96-5	Manganese	5.20E-03 n	1.15E-08	5.33E-08	1.32E-07	1.35E-07	3.51E-07	1.46E-07	No	No	No	No	No	No
7440-09-7	Potassium	NA	2.72E-07	1.26E-06	3.12E-06	3.18E-06	8.29E-06	3.44E-06	NA					
7782-49-2	Selenium	2.10E+00 n	1.39E-09	6.42E-09	1.59E-08	1.62E-08	4.23E-08	1.75E-08	No	No	No	No	No	No
7440-23-5	Sodium	NA	9.75E-06	4.52E-05	1.12E-04	1.14E-04	2.97E-04	1.23E-04	NA					
7440-24-6	Strontium	NA	5.11E-08	2.37E-07	5.88E-07	5.99E-07	1.56E-06	6.47E-07	NA					
7440-61-1	Uranium	4.20E-03 n	2.02E-09	9.37E-09	2.32E-08	2.37E-08	6.17E-08	2.56E-08	No	No	No	No	No	No
7440-66-6	Zinc	NA	8.59E-10	3.98E-09	9.88E-09	1.01E-08	2.62E-08	1.09E-08	NA					

Notes:

^a The residential air screening levels were obtained from the most recent EPA online generic Regional Screening Levels (RSL) tables located at: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (EPA 2023a). The screening levels target a cancer risk (c) level of 1E-06 and a noncarcinogenic (n) hazard quotient of 0.1.

^b Offsite air concentrations above each offsite location are calculated to result from releases of pond sediment dust into the air under Alternative 1, followed by offsite transport and dispersion.

NA - Screening level is not available.

Table D-7-2. Comparisons of Predicted Offsite Surface Soil Concentrations from Air Deposition with Resident Farmer Soil Screening Levels, Remedial Alternative 1

CAS Number	Parameter	Soil Screening Levels for Offsite Resident Farmer (mg/kg) ^a	Predicted Surface Soil Concentration at Offsite Location Following Air Deposition (mg/kg) ^b						Does Predicted Surface Soil Concentration at Offsite Location Exceed the PRG? (Yes/No)					
			Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	9.79E-03 c	2.18E-10	1.01E-09	2.51E-09	2.56E-09	6.78E-09	2.76E-09	No	No	No	No	No	No
7440-43-9	Cadmium	7.42E-03 n	2.00E-11	9.29E-11	2.31E-10	2.35E-10	6.24E-10	2.54E-10	No	No	No	No	No	No
7440-70-2	Calcium	NA	2.81E-05	1.30E-04	3.23E-04	3.30E-04	8.74E-04	3.56E-04	NA					
7439-92-1	Lead	1.73E+00	3.26E-10	1.51E-09	3.75E-09	3.83E-09	1.01E-08	4.13E-09	No	No	No	No	No	No
7439-95-4	Magnesium	NA	1.69E-05	7.84E-05	1.95E-04	1.98E-04	5.26E-04	2.14E-04	NA					
7439-96-5	Manganese	2.00E+01 n	9.11E-08	4.23E-07	1.05E-06	1.07E-06	2.84E-06	1.16E-06	No	No	No	No	No	No
7440-09-7	Potassium	NA	2.15E-06	9.98E-06	2.48E-05	2.53E-05	6.70E-05	2.73E-05	NA					
7782-49-2	Selenium	6.03E-01 n	1.10E-08	5.09E-08	1.26E-07	1.29E-07	3.42E-07	1.39E-07	No	No	No	No	No	No
7440-23-5	Sodium	NA	7.72E-05	3.58E-04	8.89E-04	9.07E-04	2.40E-03	9.79E-04	NA					
7440-24-6	Strontium	9.37E+00 n	4.05E-07	1.88E-06	4.66E-06	4.76E-06	1.26E-05	5.13E-06	No	No	No	No	No	No
7440-61-1	Uranium	1.00E-01 n	1.60E-08	7.43E-08	1.84E-07	1.88E-07	4.99E-07	2.03E-07	No	No	No	No	No	No
7440-66-6	Zinc	5.14E+00 n	6.80E-09	3.16E-08	7.83E-08	7.99E-08	2.12E-07	8.62E-08	No	No	No	No	No	No

Notes:

^a The soil screening levels for the offsite resident farmer were calculated from ORNL's online RAIS PRG calculator (ORNL 2023). The following pathways are included in the PRG calculations: soil ingestion, dermal contact, and inhalation of resuspended dusts, along with the consumption of homegrown produce, dairy, and beef impacted by soil deposition. Groundwater impacts are not included because the results of RESRAD-OFFSITE calculations show no impacts to groundwater from offsite soil deposition. The offsite locations are also not impacted by releases of sediment contaminants to the groundwater beneath the pond due to the upgradient and crossgradient locations of the offsite receptors relative to the groundwater flow of contaminants from the evaporation pond. The screening levels are compared to the calculated offsite surface soil concentrations predicted to result from air deposition under Alternative 1.

^b Offsite surface soil concentrations are calculated to result from atmospheric releases and deposition from one year of pond remediation and are calculated for each chemical by dividing the maximum detected pond sediment concentration by the corresponding atmospheric attenuation factor for the offsite receptor location of interest.

NA - No toxicity criteria are available to calculate a screening level.

Table D-7-3. Comparisons of Predicted Offsite Surface Soil Concentrations from Air Deposition with Groundwater Protection Soil Screening Levels, Remedial Alternative 1

CAS Number	Parameter	Units	Risk-Based Soil Screening Levels for Groundwater Protection ^a	MCL-Based Soil Screening Levels for Groundwater Protection ^a	Predicted Surface Soil Concentration at Offsite Location Following Air Deposition (mg/kg) ^b						Does Predicted Surface Soil Concentration at Offsite Location Exceed the Risk-Based Screening Level? (Yes/No)						Does Predicted Surface Soil Concentration at Offsite Location Exceed the MCL-Based Screening Level? (Yes/No)					
					Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
13966-29-5	Uranium-234	pCi/g	2.40E-05 c	5.84E-03	4.70E-09	2.18E-08	5.41E-08	5.52E-08	1.46E-07	5.95E-08	No	No	No	No	No	No	No	No	No	No	No	No
15117-96-1	Uranium-235	pCi/g	3.44E-05 c	1.22E-02	3.02E-10	1.40E-09	3.48E-09	3.55E-09	9.41E-09	3.83E-09	No	No	No	No	No	No	No	No	No	No	No	No
24678-82-8	Uranium-238	pCi/g	1.97E-05 c	2.97E-03	4.14E-09	1.92E-08	4.77E-08	4.86E-08	1.29E-07	5.24E-08	No	No	No	No	No	No	No	No	No	No	No	No
7440-38-2	Arsenic	mg/kg	1.50E-03 c	2.90E-01	2.18E-10	1.01E-09	2.51E-09	2.56E-09	6.78E-09	2.76E-09	No	No	No	No	No	No	No	No	No	No	No	No
7440-39-3	Barium	mg/kg	1.60E+01 n	8.20E+01	6.23E-09	2.89E-08	7.18E-08	7.32E-08	1.94E-07	7.90E-08	No	No	No	No	No	No	No	No	No	No	No	No
7440-43-9	Cadmium	mg/kg	1.40E-02 n	3.80E-01	2.00E-11	9.29E-11	2.31E-10	2.35E-10	6.24E-10	2.54E-10	No	No	No	No	No	No	No	No	No	No	No	No
7440-70-2	Calcium	mg/kg	NA	NA	2.81E-05	1.30E-04	3.23E-04	3.30E-04	8.74E-04	3.56E-04	NA						NA					
7439-92-1	Lead	mg/kg	NA	1.40E+01	3.26E-10	1.51E-09	3.75E-09	3.83E-09	1.01E-08	4.13E-09	NA						No	No	No	No	No	No
7439-95-4	Magnesium	mg/kg	NA	NA	1.69E-05	7.84E-05	1.95E-04	1.98E-04	5.26E-04	2.14E-04	NA						NA					
7439-96-5	Manganese	mg/kg	2.80E+00 n	NA	9.11E-08	4.23E-07	1.05E-06	1.07E-06	2.84E-06	1.16E-06	No	No	No	No	No	No	NA					
14797-55-8	Nitrate as Nitrogen	mg/kg	NA	NA	8.35E-06	3.88E-05	9.62E-05	9.81E-05	2.60E-04	1.06E-04	NA						NA					
7440-09-7	Potassium	mg/kg	NA	NA	2.15E-06	9.98E-06	2.48E-05	2.53E-05	6.70E-05	2.73E-05	NA						NA					
7782-49-2	Selenium	mg/kg	5.20E-02 n	2.60E-01	1.10E-08	5.09E-08	1.26E-07	1.29E-07	3.42E-07	1.39E-07	No	No	No	No	No	No	No	No	No	No	No	No
7440-23-5	Sodium	mg/kg	NA	NA	7.72E-05	3.58E-04	8.89E-04	9.07E-04	2.40E-03	9.79E-04	NA						NA					
7440-24-6	Strontium	mg/kg	4.20E+01 n	NA	4.05E-07	1.88E-06	4.66E-06	4.76E-06	1.26E-05	5.13E-06	No	No	No	No	No	No	NA					
7440-61-1	Uranium	mg/kg	1.80E-01 n	1.40E+01	1.60E-08	7.43E-08	1.84E-07	1.88E-07	4.99E-07	2.03E-07	No	No	No	No	No	No	No	No	No	No	No	No
7440-66-6	Zinc	mg/kg	3.70E+01 n	NA	6.80E-09	3.16E-08	7.83E-08	7.99E-08	2.12E-07	8.62E-08	No	No	No	No	No	No	NA					

Notes:

^a The groundwater protection soil screening levels for radionuclides and chemicals were obtained from EPA's generic radiological Preliminary Remediation Goal (PRG) tables (EPA 2022a) and EPA's generic Regional Screening Levels (RSL) tables (EPA 2023a), respectively. The risk-based screening levels target an ELCR of 1E-06 and a HQ of 0.1. The screening levels are compared to the calculated offsite surface soil concentrations predicted to result from air deposition under Alternative 1. Surface soil concentrations exceeding the greater of the risk-based and MCL-based screening levels are identified as COPCs for the soil to groundwater migration pathway.

^b Offsite surface soil concentrations are calculated to result from atmospheric releases and deposition from one year of pond remediation and are calculated for each chemical by dividing the maximum detected pond sediment concentration by the corresponding atmospheric attenuation factor for the offsite receptor location of interest.

NA - No toxicity criteria are available to calculate a screening level.

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Table D-8-1. Risk-Based Screening Level Comparisons with Predicted Offsite Air Concentrations from Pond Dust Releases to the Air During Alternatives 2/3 Remedial Actions, Shiprock, New Mexico, Disposal Site

CAS Number	Parameter	Residential Air Screening Levels (µg/m ³) ^a	Predicted Air Concentration of Chemical Above Offsite Location (µg/m ³) ^b						Does Predicted Air Concentration of Chemical Above Offsite Location Exceed the Screening Level? (Yes/No)					
			Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	6.50E-04 c	6.54E-07	3.04E-06	7.51E-06	7.67E-06	2.00E-05	8.28E-06	No	No	No	No	No	No
7440-43-9	Cadmium	1.00E-04 n	6.01E-08	2.80E-07	6.91E-07	7.05E-07	1.84E-06	7.62E-07	No	No	No	No	No	No
7440-70-2	Calcium	NA	8.43E-02	3.92E-01	9.68E-01	9.88E-01	2.58E+00	1.07E+00	NA					
7439-92-1	Lead	1.50E-01	9.79E-07	4.55E-06	1.12E-05	1.15E-05	3.00E-05	1.24E-05	No	No	No	No	No	No
7439-95-4	Magnesium	NA	5.07E-02	2.36E-01	5.83E-01	5.95E-01	1.55E+00	6.43E-01	NA					
7439-96-5	Manganese	5.20E-03 n	2.74E-04	1.27E-03	3.14E-03	3.21E-03	8.38E-03	3.47E-03	No	No	No	No	Yes	No
7440-09-7	Potassium	NA	6.46E-03	3.00E-02	7.42E-02	7.58E-02	1.98E-01	8.18E-02	NA					
7782-49-2	Selenium	2.10E+00 n	3.30E-05	1.53E-04	3.79E-04	3.87E-04	1.01E-03	4.18E-04	No	No	No	No	No	No
7440-23-5	Sodium	NA	2.32E-01	1.08E+00	2.66E+00	2.72E+00	7.10E+00	2.94E+00	NA					
7440-24-6	Strontium	NA	1.22E-03	5.65E-03	1.40E-02	1.43E-02	3.73E-02	1.54E-02	NA					
7440-61-1	Uranium	4.20E-03 n	4.81E-05	2.24E-04	5.52E-04	5.64E-04	1.47E-03	6.09E-04	No	No	No	No	No	No
7440-66-6	Zinc	NA	2.04E-05	9.50E-05	2.35E-04	2.40E-04	6.26E-04	2.59E-04	NA					

Notes:

^a The residential air screening levels were obtained from the most recent EPA online generic Regional Screening Levels (RSL) tables located at: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (EPA 2023a). The screening levels target a cancer risk (c) level of 1E-06 and a noncarcinogenic (n) hazard quotient of 0.1.

^b Offsite air concentrations above each offsite location are calculated to result from releases of pond sediment dust into the air during Alternatives 2 and 3 remedial actions, followed by offsite transport and dispersion.

NA - Screening level is not available.

Table D-8-2. Comparisons of Predicted Post-Remedy Offsite Surface Soil Concentrations from Air Deposition with Resident Farmer Soil Screening Levels, Remedial Alternatives 2/3

CAS Number	Parameter	Soil Screening Levels for Offsite Resident Farmer (mg/kg) ^a	Predicted Surface Soil Concentration at Offsite Location Following Air Deposition (mg/kg) ^b						Does Predicted Surface Soil Concentration at Offsite Location Exceed the PRG? (Yes/No)					
			Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F
7440-38-2	Arsenic	9.79E-03 c	8.97E-08	4.16E-07	1.03E-06	1.05E-06	2.78E-06	1.14E-06	No	No	No	No	No	No
7440-43-9	Cadmium	7.42E-03 n	8.25E-09	3.83E-08	9.50E-08	9.70E-08	2.56E-07	1.05E-07	No	No	No	No	No	No
7440-70-2	Calcium	NA	1.16E-02	5.37E-02	1.33E-01	1.36E-01	3.59E-01	1.46E-01	NA					
7439-92-1	Lead	1.73E+00	1.34E-07	6.23E-07	1.55E-06	1.58E-06	4.16E-06	1.70E-06	No	No	No	No	No	No
7439-95-4	Magnesium	NA	6.96E-03	3.23E-02	8.02E-02	8.18E-02	2.16E-01	8.82E-02	NA					
7439-96-5	Manganese	2.00E+01 n	3.75E-05	1.74E-04	4.32E-04	4.41E-04	1.16E-03	4.76E-04	No	No	No	No	No	No
7440-09-7	Potassium	NA	8.86E-04	4.12E-03	1.02E-02	1.04E-02	2.75E-02	1.12E-02	NA					
7782-49-2	Selenium	6.03E-01 n	4.52E-06	2.10E-05	5.21E-05	5.32E-05	1.40E-04	5.73E-05	No	No	No	No	No	No
7440-23-5	Sodium	NA	3.18E-02	1.48E-01	3.66E-01	3.74E-01	9.86E-01	4.03E-01	NA					
7440-24-6	Strontium	9.37E+00 n	1.67E-04	7.75E-04	1.92E-03	1.96E-03	5.17E-03	2.11E-03	No	No	No	No	No	No
7440-61-1	Uranium	1.00E-01 n	6.59E-06	3.06E-05	7.60E-05	7.75E-05	2.05E-04	8.36E-05	No	No	No	No	No	No
7440-66-6	Zinc	5.14E+00 n	2.80E-06	1.30E-05	3.23E-05	3.29E-05	8.69E-05	3.55E-05	No	No	No	No	No	No

Notes:

^a The soil PRGs for the offsite resident farmer were calculated from ORNL's online RAIS PRG calculator (ORNL 2023). The following pathways are included in the PRG calculations: soil ingestion, dermal contact, and inhalation of resuspended dusts, along with the consumption of homegrown produce, dairy, and beef impacted by soil deposition. Groundwater impacts are not included because the results of RESRAD-OFFSITE calculations show no impacts to groundwater from offsite soil deposition (per Alternatives 2 & 3). The offsite locations are also not impacted by releases of sediment contaminants to the groundwater beneath the pond due to the upgradient and crossgradient locations of the offsite receptors relative to the groundwater flow of contaminants from the evaporation pond (per Alternative 1). The PRGs are compared to the calculated offsite surface soil concentrations predicted to result from air deposition.

^b Offsite surface soil concentrations are calculated to result from atmospheric releases and deposition from one year of pond remediation and are calculated for each chemical by dividing the maximum detected pond sediment concentration by the corresponding atmospheric attenuation factor for the offsite receptor location of interest.

NA - No toxicity criteria are available to calculate a screening level.

Table D-8-3. Comparisons of Predicted Post-Remedy Offsite Surface Soil Concentrations from Air Deposition with Groundwater Protection Soil Screening Levels, Remedial Alternatives 2/3

CAS Number	Parameter	Units	Risk-Based Soil Screening Levels for Groundwater Protection ^a	MCL-Based Soil Screening Levels for Groundwater Protection ^a	Predicted Surface Soil Concentration at Offsite Location Following Air Deposition (mg/kg) ^b						Does Predicted Surface Soil Concentration at Offsite Location Exceed the Risk-Based Screening Level? (Yes/No)						Does Predicted Surface Soil Concentration at Offsite Location Exceed the Risk-Based Screening Level? (Yes/No)						
					Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	Offsite Location A	Offsite Location B	Offsite Location C	Offsite Location D	Offsite Location E	Offsite Location F	
13966-29-5	Uranium-234	pCi/g	2.40E-05	c	5.84E-03	1.94E-06	8.99E-06	2.23E-05	2.28E-05	6.00E-05	2.45E-05	No	No	No	No	Yes	Yes	No	No	No	No	No	No
15117-96-1	Uranium-235	pCi/g	3.44E-05	c	1.22E-02	1.24E-07	5.78E-07	1.43E-06	1.46E-06	3.86E-06	1.58E-06	No	No	No	No	No	No	No	No	No	No	No	No
24678-82-8	Uranium-238	pCi/g	1.97E-05	c	2.97E-03	1.70E-06	7.92E-06	1.96E-05	2.00E-05	5.29E-05	2.16E-05	No	No	No	Yes	Yes	Yes	No	No	No	No	No	No
7440-38-2	Arsenic	mg/kg	1.50E-03	c	2.90E-01	8.97E-08	4.16E-07	1.03E-06	1.05E-06	2.78E-06	1.14E-06	No	No	No	No	No	No	No	No	No	No	No	No
7440-39-3	Barium	mg/kg	1.60E+01	n	8.20E+01	2.57E-06	1.19E-05	2.96E-05	3.02E-05	7.96E-05	3.25E-05	No	No	No	No	No	No	No	No	No	No	No	No
7440-43-9	Cadmium	mg/kg	1.40E-02	n	3.80E-01	8.25E-09	3.83E-08	9.50E-08	9.70E-08	2.56E-07	1.05E-07	No	No	No	No	No	No	No	No	No	No	No	No
7440-70-2	Calcium	mg/kg	NA		NA	1.16E-02	5.37E-02	1.33E-01	1.36E-01	3.59E-01	1.46E-01	NA						NA					
7439-92-1	Lead	mg/kg	NA		1.40E+01	1.34E-07	6.23E-07	1.55E-06	1.58E-06	4.16E-06	1.70E-06	NA						No	No	No	No	No	No
7439-95-4	Magnesium	mg/kg	NA		NA	6.96E-03	3.23E-02	8.02E-02	8.18E-02	2.16E-01	8.82E-02	NA						NA					
7439-96-5	Manganese	mg/kg	2.80E+00	n	NA	3.75E-05	1.74E-04	4.32E-04	4.41E-04	1.16E-03	4.76E-04	No	No	No	No	No	No	NA					
14797-55-8	Nitrate as Nitrogen	mg/kg	NA		NA	3.44E-03	1.60E-02	3.96E-02	4.05E-02	1.07E-01	4.36E-02	NA						NA					
7440-09-7	Potassium	mg/kg	NA		NA	8.86E-04	4.12E-03	1.02E-02	1.04E-02	2.75E-02	1.12E-02	NA						NA					
7782-49-2	Selenium	mg/kg	5.20E-02	n	2.60E-01	4.52E-06	2.10E-05	5.21E-05	5.32E-05	1.40E-04	5.73E-05	No	No	No	No	No	No	No	No	No	No	No	No
7440-23-5	Sodium	mg/kg	NA		NA	3.18E-02	1.48E-01	3.66E-01	3.74E-01	9.86E-01	4.03E-01	NA						NA					
7440-24-6	Strontium	mg/kg	4.20E+01	n	NA	1.67E-04	7.75E-04	1.92E-03	1.96E-03	5.17E-03	2.11E-03	No	No	No	No	No	No	NA					
7440-61-1	Uranium	mg/kg	1.80E-01	n	1.40E+01	6.59E-06	3.06E-05	7.60E-05	7.75E-05	2.05E-04	8.36E-05	No	No	No	No	No	No	No	No	No	No	No	No
7440-66-6	Zinc	mg/kg	3.70E+01	n	NA	2.80E-06	1.30E-05	3.23E-05	3.29E-05	8.69E-05	3.55E-05	No	No	No	No	No	No	NA					

Notes:

^a The groundwater protection soil screening levels for radionuclides and chemicals were obtained from EPA's generic radiological Preliminary Remediation Goal (PRG) tables (EPA 2022a) and EPA's generic Regional Screening Levels (RSL) tables (EPA 2023a), respectively. The risk-based screening levels target an ELCR of 1E-06 and a HQ of 0.1. The screening levels are compared to the calculated offsite surface soil concentrations predicted to result from air deposition under Alternative 1. Surface soil concentrations exceeding the greater of the risk-based and MCL-based screening levels are identified as COPCs for the soil to groundwater migration pathway.

^b Offsite surface soil concentrations are calculated to result from atmospheric releases and deposition from one year of pond remediation and are calculated for each chemical by dividing the maximum detected pond sediment concentration by the corresponding atmospheric attenuation factor for the offsite receptor location of interest.

NA - No toxicity criteria are available to calculate a screening level.

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Table D-9-1. Summary of SESOIL and AT123D Modeling Results based on leaching from the contaminated sediments at Shiprock Disposal Site Evaporation Pond

CMCOPC	SESOIL Source Term Concentration (mg/kg or pCi/g)	SESOIL- Predicted Maximum Concentration in Leachate C _{L,MAX} (mg/L or pCi/L)	SESOIL- Predicted Time of Maximum Concentration (years)	AT123D- Predicted C _{max,R0} in Groundwater at Receptor R0 (mg/L or pCi/L)	AT123D- Predicted C _{max,R1} in Groundwater at Receptor R1 (mg/L or pCi/L)	AT123D- Predicted C _{max,R2} in Groundwater at Receptor R2 (mg/L or pCi/L)	AT123D- Predicted Time of Maximum Concentration (years)	MCL/ RSL (mg/L or pCi/L)	CMCOC?
<i>Metals</i>									
Arsenic	6.90E-01	0.00E+00	>1000	NA	NA	NA	NA	1.00E-02 ^a	No
Manganese	1.63E+02	0.00E+00	>1000	NA	NA	NA	NA	4.30E-02 ^b	No
Selenium	2.92E+01	0.00E+00	>1000	NA	NA	NA	NA	5.00E-02 ^a	No
Strontium	7.37E+02	0.00E+00	>1000	NA	NA	NA	NA	1.20E+00 ^b	No
Uranium	3.90E+01	0.00E+00	>1000	NA	NA	NA	NA	3.00E-02 ^a	No
<i>Nitrate & Chloride</i>									
Nitrate	2.E+04	1.42E+04	51	2.08E+02	1.98E+02	3.71E+01	6.00E+01	1.00E+01^a	Yes
Chloride	4.E+04	9.38E+03	140	1.66E+02	1.63E+02	2.65E+01	1.50E+02	2.50E+02^c	No
<i>Radionuclides</i>									
U-234	1.49E+01	0.00E+00	>1000	NA	NA	NA	NA	1.50E+01 ^d	No
U-235	9.60E-01	0.00E+00	>1000	NA	NA	NA	NA	1.50E+01 ^d	No
U-238	1.31E+01	0.00E+00	>1000	NA	NA	NA	NA	1.50E+01 ^d	No

Key: R0 = Receptor location at downgradient boundary of the site (evaporation pond); R1 = Receptor location at nearest downgradient well; R2 = Receptor location at the nearest downgradient surface water body (i.e., San Juan River); AT123D = Analytical Transient 1-, 2-, 3-Dimensional (model); CMCOPC = Contaminant migration chemical of potential concern; CMCOC = Contaminant migration chemical of concern; C_{L,max} = Predicted maximum leachate concentration beneath the pond just above the water table; C_{max,R1} = Predicted maximum concentration in Groundwater at Receptor R1; C_{max,R2} = Predicted maximum concentration in Groundwater at Receptor R2; MCL = Maximum contaminant level; pCi/L = Picocuries per liter; mg/L = miligram per liter; NA = Not applicable; RSL = Regional screening level; SESOIL = Seasonal Soil Compartment (model).; **Bold** = CMCOPCs that exceeded the groundwater criteria

^a EPA MCL (EPA 2023a).

^b EPATap water RSL targeting a noncancer hazard quotient of 0.1 (EPA 2023a).

^c No primary EPA MCL or tap water RSL is available for chloride; therefore, the secondary MCL is applied (EPA 2020).

^d EPA MCL for gross alpha activity in drinking water (EPA 2020).

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ATTACHMENT D-10

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Table D-10-1. UCL Statistics for Uncensored Full Sediment Data Sets, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/10/2023 9:25:39 AM
From File	SHP02-02.2301003_Results_Working_f.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Gross Alpha (pCi/g)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	5.92	Mean	17.45
Maximum	42	Median	17.9
SD	9.826	Std. Error of Mean	2.963
Coefficient of Variation	0.563	Skewness	1.566
Normal GOF Test			
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.185	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	22.82	95% Adjusted-CLT UCL (Chen-1995)	23.82
		95% Modified-t UCL (Johnson-1978)	23.05
Gamma GOF Test			
A-D Test Statistic	0.238	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.733	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.257	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.94	k star (bias corrected MLE)	2.926
Theta hat (MLE)	4.428	Theta star (bias corrected MLE)	5.963
nu hat (MLE)	86.68	nu star (bias corrected)	64.38
MLE Mean (bias corrected)	17.45	MLE Sd (bias corrected)	10.2
		Approximate Chi Square Value (0.05)	46.92
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	44.5
Assuming Gamma Distribution			
95% Approximate Gamma UCL	23.94	95% Adjusted Gamma UCL	25.25
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.975	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.778	Mean of logged Data	2.727
Maximum of Logged Data	3.738	SD of logged Data	0.543

Assuming Lognormal Distribution				
95% H-UCL	25.98	90% Chebyshev (MVUE) UCL	26.23	
95% Chebyshev (MVUE) UCL	30.2	97.5% Chebyshev (MVUE) UCL	35.72	
99% Chebyshev (MVUE) UCL	46.55			
Nonparametric Distribution Free UCL Statistics				
Data appear to follow a Discernible Distribution				
Nonparametric Distribution Free UCLs				
95% CLT UCL	22.32	95% BCA Bootstrap UCL	23.48	
95% Standard Bootstrap UCL	22.16	95% Bootstrap-t UCL	25.27	
95% Hall's Bootstrap UCL	47.7	95% Percentile Bootstrap UCL	22.56	
90% Chebyshev(Mean, Sd) UCL	26.34	95% Chebyshev(Mean, Sd) UCL	30.36	
97.5% Chebyshev(Mean, Sd) UCL	35.95	99% Chebyshev(Mean, Sd) UCL	46.93	
Suggested UCL to Use				
95% Student's-t UCL	22.82			
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL	22.82
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.				
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.				
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.				
Gross Beta (pCi/g)				
General Statistics				
Total Number of Observations	11	Number of Distinct Observations	11	
		Number of Missing Observations	0	
Minimum	5.85	Mean	23.14	
Maximum	51.7	Median	19.1	
SD	14.95	Std. Error of Mean	4.508	
Coefficient of Variation	0.646	Skewness	1.075	
Normal GOF Test				
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk GOF Test		
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level		
Lilliefors Test Statistic	0.185	Lilliefors GOF Test		
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level		
Data appear Normal at 1% Significance Level				
Assuming Normal Distribution				
95% Normal UCL		95% UCLs (Adjusted for Skewness)		
95% Student's-t UCL	31.31	95% Adjusted-CLT UCL (Chen-1995)	32.11	
		95% Modified-t UCL (Johnson-1978)	31.55	
Gamma GOF Test				
A-D Test Statistic	0.211	Anderson-Darling Gamma GOF Test		
5% A-D Critical Value	0.735	Detected data appear Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.126	Kolmogorov-Smirnov Gamma GOF Test		
5% K-S Critical Value	0.257	Detected data appear Gamma Distributed at 5% Significance Level		
Detected data appear Gamma Distributed at 5% Significance Level				
Gamma Statistics				
k hat (MLE)	2.792	k star (bias corrected MLE)	2.091	
Theta hat (MLE)	8.286	Theta star (bias corrected MLE)	11.06	
nu hat (MLE)	61.43	nu star (bias corrected)	46.01	
MLE Mean (bias corrected)	23.14	MLE Sd (bias corrected)	16	
		Approximate Chi Square Value (0.05)	31.45	
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	29.5	
Assuming Gamma Distribution				
95% Approximate Gamma UCL	33.85	95% Adjusted Gamma UCL	36.09	
Lognormal GOF Test				
Shapiro Wilk Test Statistic	0.977	Shapiro Wilk Lognormal GOF Test		
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level		
Lilliefors Test Statistic	0.106	Lilliefors Lognormal GOF Test		
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level		
Data appear Lognormal at 10% Significance Level				
Lognormal Statistics				
Minimum of Logged Data	1.766	Mean of logged Data	2.952	
Maximum of Logged Data	3.945	SD of logged Data	0.66	
Assuming Lognormal Distribution				
95% H-UCL	39.3	90% Chebyshev (MVUE) UCL	37.61	
95% Chebyshev (MVUE) UCL	44.1	97.5% Chebyshev (MVUE) UCL	53.13	
99% Chebyshev (MVUE) UCL	70.85			

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	30.55	95% BCA Bootstrap UCL	31.35
95% Standard Bootstrap UCL	30.28	95% Bootstrap-t UCL	36.28
95% Hall's Bootstrap UCL	42.99	95% Percentile Bootstrap UCL	30.73
90% Chebyshev(Mean, Sd) UCL	36.66	95% Chebyshev(Mean, Sd) UCL	42.79
97.5% Chebyshev(Mean, Sd) UCL	51.29	99% Chebyshev(Mean, Sd) UCL	67.99

Suggested UCL to Use

95% Student's-t UCL 31.31

User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL	31.31
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Uranium-233/234 (pCi/g)

General Statistics

Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	4.74	Mean	12.01
Maximum	19.2	Median	12.6
SD	5.208	Std. Error of Mean	1.57
Coefficient of Variation	0.434	Skewness	-0.034

Normal GOF Test

Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.142	Lilliefors GOF Test
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	14.85	95% Adjusted-CLT UCL (Chen-1995)	14.57
		95% Modified-t UCL (Johnson-1978)	14.85

Gamma GOF Test

A-D Test Statistic	0.36	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.156	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	5.066	k star (bias corrected MLE)	3.745
Theta hat (MLE)	2.37	Theta star (bias corrected MLE)	3.206
nu hat (MLE)	111.5	nu star (bias corrected)	82.39
MLE Mean (bias corrected)	12.01	MLE Sd (bias corrected)	6.205
		Approximate Chi Square Value (0.05)	62.47
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	59.65

Assuming Gamma Distribution

95% Approximate Gamma UCL	15.84	95% Adjusted Gamma UCL	16.58
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.911	Shapiro Wilk Lognormal GOF Test
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.164	Lilliefors Lognormal GOF Test
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level

Data appear Lognormal at 10% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.556	Mean of logged Data	2.384
Maximum of Logged Data	2.955	SD of logged Data	0.497

Assuming Lognormal Distribution

95% H-UCL	17.25	90% Chebyshev (MVUE) UCL	17.67
95% Chebyshev (MVUE) UCL	20.19	97.5% Chebyshev (MVUE) UCL	23.68
99% Chebyshev (MVUE) UCL	30.55		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	14.59	95% BCA Bootstrap UCL	14.54
95% Standard Bootstrap UCL	14.51	95% Bootstrap-t UCL	14.9
95% Hall's Bootstrap UCL	14.42	95% Percentile Bootstrap UCL	14.56
90% Chebyshev(Mean, Sd) UCL	16.72	95% Chebyshev(Mean, Sd) UCL	18.85
97.5% Chebyshev(Mean, Sd) UCL	21.81	99% Chebyshev(Mean, Sd) UCL	27.63
Suggested UCL to Use			
95% Student's-t UCL	14.85		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 14.85
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

Uranium-238 (pCi/g)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	4.33	Mean	10.51
Maximum	17.1	Median	10.3
SD	4.699	Std. Error of Mean	1.417
Coefficient of Variation	0.447	Skewness	-0.00274
Normal GOF Test			
Shapiro Wilk Test Statistic	0.924	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	13.08	95% Adjusted-CLT UCL (Chen-1995)	12.84
		95% Modified-t UCL (Johnson-1978)	13.08
Gamma GOF Test			
A-D Test Statistic	0.408	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.732	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.162	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.777	k star (bias corrected MLE)	3.535
Theta hat (MLE)	2.201	Theta star (bias corrected MLE)	2.974
nu hat (MLE)	105.1	nu star (bias corrected)	77.76
MLE Mean (bias corrected)	10.51	MLE Sd (bias corrected)	5.592
		Approximate Chi Square Value (0.05)	58.45
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	55.73
Assuming Gamma Distribution			
95% Approximate Gamma UCL	13.99	95% Adjusted Gamma UCL	14.67
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.466	Mean of logged Data	2.244
Maximum of Logged Data	2.839	SD of logged Data	0.512
Assuming Lognormal Distribution			
95% H-UCL	15.33	90% Chebyshev (MVUE) UCL	15.64
95% Chebyshev (MVUE) UCL	17.91	97.5% Chebyshev (MVUE) UCL	21.07
99% Chebyshev (MVUE) UCL	27.27		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	12.84	95% BCA Bootstrap UCL	12.79
95% Standard Bootstrap UCL	12.76	95% Bootstrap-t UCL	13.14
95% Hall's Bootstrap UCL	12.7	95% Percentile Bootstrap UCL	12.8
90% Chebyshev(Mean, Sd) UCL	14.76	95% Chebyshev(Mean, Sd) UCL	16.69
97.5% Chebyshev(Mean, Sd) UCL	19.36	99% Chebyshev(Mean, Sd) UCL	24.61
Suggested UCL to Use			
95% Student's-t UCL	13.08		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 13.08
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

Barium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.741	Mean	4.656
Maximum	19.7	Median	3.67
SD	5.349	Std. Error of Mean	1.613
Coefficient of Variation	1.149	Skewness	2.582
Normal GOF Test			
Shapiro Wilk Test Statistic	0.677	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Approximate Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	7.579	95% Adjusted-CLT UCL (Chen-1995)	8.65
		95% Modified-t UCL (Johnson-1978)	7.788
Gamma GOF Test			
A-D Test Statistic	0.413	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.167	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.261	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.3	k star (bias corrected MLE)	1.006
Theta hat (MLE)	3.582	Theta star (bias corrected MLE)	4.629
nu hat (MLE)	28.6	nu star (bias corrected)	22.13
MLE Mean (bias corrected)	4.656	MLE Sd (bias corrected)	4.642
		Approximate Chi Square Value (0.05)	12.44
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	11.27
Assuming Gamma Distribution			
95% Approximate Gamma UCL	8.286	95% Adjusted Gamma UCL	9.145
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.3	Mean of logged Data	1.107
Maximum of Logged Data	2.981	SD of logged Data	0.951
Assuming Lognormal Distribution			
95% H-UCL	11.39	90% Chebyshev (MVUE) UCL	8.595
95% Chebyshev (MVUE) UCL	10.45	97.5% Chebyshev (MVUE) UCL	13.02
99% Chebyshev (MVUE) UCL	18.08		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	7.309	95% BCA Bootstrap UCL	8.924
95% Standard Bootstrap UCL	7.205	95% Bootstrap-t UCL	11.46
95% Hall's Bootstrap UCL	18.42	95% Percentile Bootstrap UCL	7.509
90% Chebyshev(Mean, Sd) UCL	9.494	95% Chebyshev(Mean, Sd) UCL	11.69
97.5% Chebyshev(Mean, Sd) UCL	14.73	99% Chebyshev(Mean, Sd) UCL	20.7

Suggested UCL to Use

95% Student's-t UCL7.579

User Identified Distribution:GUser Selected UCL:95% Adjusted Gamma UCL9.145

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods, then contact a statistician to correctly calculate UCLs.

When a data set follows an approximate distribution passing only one of the GOF tests, it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Calcium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	4480	Mean	30119
Maximum	88700	Median	21500
SD	29960	Std. Error of Mean	9033
Coefficient of Variation	0.995	Skewness	1.372
Normal GOF Test			
Shapiro Wilk Test Statistic	0.789	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.24	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Approximate Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 46492		95% Adjusted-CLT UCL (Chen-1995) 48971	
		95% Modified-t UCL (Johnson-1978) 47115	
Gamma GOF Test			
A-D Test Statistic	0.381	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.137	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.261	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.209	k star (bias corrected MLE)	0.94
Theta hat (MLE)	24910	Theta star (bias corrected MLE)	32043
nu hat (MLE)	26.6	nu star (bias corrected)	20.68
MLE Mean (bias corrected)	30119	MLE Sd (bias corrected)	31066
		Approximate Chi Square Value (0.05)	11.35
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	10.24
Assuming Gamma Distribution			
95% Approximate Gamma UCL	54860	95% Adjusted Gamma UCL	60803
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.149	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	8.407	Mean of logged Data	9.845
Maximum of Logged Data	11.39	SD of logged Data	1.053

Assuming Lognormal Distribution			
95% H-UCL	92339	90% Chebyshev (MVUE) UCL	61693
95% Chebyshev (MVUE) UCL	75755	97.5% Chebyshev (MVUE) UCL	95271
99% Chebyshev (MVUE) UCL	133608		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	44978	95% BCA Bootstrap UCL	47196
95% Standard Bootstrap UCL	44206	95% Bootstrap-t UCL	62809
95% Hall's Bootstrap UCL	131957	95% Percentile Bootstrap UCL	45251
90% Chebyshev(Mean, Sd) UCL	57219	95% Chebyshev(Mean, Sd) UCL	69495
97.5% Chebyshev(Mean, Sd) UCL	86533	99% Chebyshev(Mean, Sd) UCL	120000
Suggested UCL to Use			
95% Student's-t UCL 46492			
User Identified Distribution:	G	User Selected UCL:	95% Adjusted Gamma UCL 60803
When a data set follows an approximate distribution passing only one of the GOF tests, it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Magnesium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	17600	Mean	37127
Maximum	53400	Median	40400
SD	10068	Std. Error of Mean	3036
Coefficient of Variation	0.271	Skewness	-0.521
Normal GOF Test			
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.173	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 42629		95% Adjusted-CLT UCL (Chen-1995) 41611	
		95% Modified-t UCL (Johnson-1978) 42550	
Gamma GOF Test			
A-D Test Statistic	0.534	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.2	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	12.65	k star (bias corrected MLE)	9.258
Theta hat (MLE)	2936	Theta star (bias corrected MLE)	4010
nu hat (MLE)	278.2	nu star (bias corrected)	203.7
MLE Mean (bias corrected)	37127	MLE Sd (bias corrected)	12202
		Approximate Chi Square Value (0.05)	171.7
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	166.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL	44053	95% Adjusted Gamma UCL	45319
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.207	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.776	Mean of logged Data	10.48
Maximum of Logged Data	10.89	SD of logged Data	0.313

Assuming Lognormal Distribution			
95% H-UCL	45470	90% Chebyshev (MVUE) UCL	47919
95% Chebyshev (MVUE) UCL	52737	97.5% Chebyshev (MVUE) UCL	59424
99% Chebyshev (MVUE) UCL	72559		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	42120	95% BCA Bootstrap UCL	41745
95% Standard Bootstrap UCL	41917	95% Bootstrap-t UCL	42258
95% Hall's Bootstrap UCL	41881	95% Percentile Bootstrap UCL	41809
90% Chebyshev(Mean, Sd) UCL	46234	95% Chebyshev(Mean, Sd) UCL	50359
97.5% Chebyshev(Mean, Sd) UCL	56085	99% Chebyshev(Mean, Sd) UCL	67332
Suggested UCL to Use			
95% Student's-t UCL 42629			
User Identified Distribution: N User Selected UCL: 95% Student's-t UCL 42629			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

Manganese (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	15.6	Mean	108.7
Maximum	288	Median	78.7
SD	98.59	Std. Error of Mean	29.73
Coefficient of Variation	0.907	Skewness	0.97
Normal GOF Test			
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.214	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	162.6	95% Adjusted-CLT UCL (Chen-1995)	166.9
		95% Modified-t UCL (Johnson-1978)	164
Gamma GOF Test			
A-D Test Statistic	0.303	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.14	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.261	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.293	k star (bias corrected MLE)	1.001
Theta hat (MLE)	84.06	Theta star (bias corrected MLE)	108.6
nu hat (MLE)	28.45	nu star (bias corrected)	22.02
MLE Mean (bias corrected)	108.7	MLE Sd (bias corrected)	108.6
		Approximate Chi Square Value (0.05)	12.36
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	11.19
Assuming Gamma Distribution			
95% Approximate Gamma UCL	193.8	95% Adjusted Gamma UCL	213.9
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.123	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.747	Mean of logged Data	4.255
Maximum of Logged Data	5.663	SD of logged Data	1.033

Assuming Lognormal Distribution			
95% H-UCL	326.7	90% Chebyshev (MVUE) UCL	223.9
95% Chebyshev (MVUE) UCL	274.4	97.5% Chebyshev (MVUE) UCL	344.5
99% Chebyshev (MVUE) UCL	482.3		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	157.6	95% BCA Bootstrap UCL	167.1
95% Standard Bootstrap UCL	155.7	95% Bootstrap-t UCL	180.3
95% Hall's Bootstrap UCL	162.3	95% Percentile Bootstrap UCL	160
90% Chebyshev(Mean, Sd) UCL	197.9	95% Chebyshev(Mean, Sd) UCL	238.3
97.5% Chebyshev(Mean, Sd) UCL	294.3	99% Chebyshev(Mean, Sd) UCL	404.5
Suggested UCL to Use			
95% Student's-t UCL	162.6		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 162.6
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Potassium (mg/kg)			
General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	2320	Mean	4433
Maximum	6800	Median	4490
SD	1338	Std. Error of Mean	403.5
Coefficient of Variation	0.302	Skewness	0.106
Normal GOF Test			
Shapiro Wilk Test Statistic	0.988	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.0842	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5164	95% Adjusted-CLT UCL (Chen-1995)	5110
		95% Modified-t UCL (Johnson-1978)	5166
Gamma GOF Test			
A-D Test Statistic	0.155	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.114	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	11.3	k star (bias corrected MLE)	8.278
Theta hat (MLE)	392.3	Theta star (bias corrected MLE)	535.5
nu hat (MLE)	248.6	nu star (bias corrected)	182.1
MLE Mean (bias corrected)	4433	MLE Sd (bias corrected)	1541
		Approximate Chi Square Value (0.05)	151.9
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	147.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL	5314	95% Adjusted Gamma UCL	5477
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.749	Mean of logged Data	8.352
Maximum of Logged Data	8.825	SD of logged Data	0.322

Assuming Lognormal Distribution			
95% H-UCL	5458	90% Chebyshev (MVUE) UCL	5750
95% Chebyshev (MVUE) UCL	6343	97.5% Chebyshev (MVUE) UCL	7165
99% Chebyshev (MVUE) UCL	8781		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	5096	95% BCA Bootstrap UCL	5088
95% Standard Bootstrap UCL	5072	95% Bootstrap-t UCL	5216
95% Hall's Bootstrap UCL	5185	95% Percentile Bootstrap UCL	5065
90% Chebyshev(Mean, Sd) UCL	5643	95% Chebyshev(Mean, Sd) UCL	6191
97.5% Chebyshev(Mean, Sd) UCL	6952	99% Chebyshev(Mean, Sd) UCL	8447
Suggested UCL to Use			
95% Student's-t UCL	5164		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 5164
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Selenium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	21.4	Mean	26.67
Maximum	34.7	Median	26.6
SD	4.611	Std. Error of Mean	1.39
Coefficient of Variation	0.173	Skewness	0.529
Normal GOF Test			
Shapiro Wilk Test Statistic	0.912	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	29.19	95% Adjusted-CLT UCL (Chen-1995)	29.2
		95% Modified-t UCL (Johnson-1978)	29.23
Gamma GOF Test			
A-D Test Statistic	0.421	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.216	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	38.01	k star (bias corrected MLE)	27.7
Theta hat (MLE)	0.702	Theta star (bias corrected MLE)	0.963
nu hat (MLE)	836.2	nu star (bias corrected)	609.4
MLE Mean (bias corrected)	26.67	MLE Sd (bias corrected)	5.068
		Approximate Chi Square Value (0.05)	553.2
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	544.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL	29.39	95% Adjusted Gamma UCL	29.86
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.203	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.063	Mean of logged Data	3.27
Maximum of Logged Data	3.547	SD of logged Data	0.169
Assuming Lognormal Distribution			
95% H-UCL	29.46	90% Chebyshev (MVUE) UCL	30.76
95% Chebyshev (MVUE) UCL	32.62	97.5% Chebyshev (MVUE) UCL	35.19
99% Chebyshev (MVUE) UCL	40.25		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	28.96	95% BCA Bootstrap UCL	29.18
95% Standard Bootstrap UCL	28.89	95% Bootstrap-t UCL	29.71
95% Hall's Bootstrap UCL	28.93	95% Percentile Bootstrap UCL	28.95
90% Chebyshev(Mean, Sd) UCL	30.84	95% Chebyshev(Mean, Sd) UCL	32.73
97.5% Chebyshev(Mean, Sd) UCL	35.36	99% Chebyshev(Mean, Sd) UCL	40.51
Suggested UCL to Use			
95% Student's-t UCL	29.19		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 29.19
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Sodium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	122000	Mean	173273
Maximum	244000	Median	165000
SD	40147	Std. Error of Mean	12105
Coefficient of Variation	0.232	Skewness	0.428
Normal GOF Test			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 195212		95% Adjusted-CLT UCL (Chen-1995) 194852	
		95% Modified-t UCL (Johnson-1978) 195473	
Gamma GOF Test			
A-D Test Statistic	0.222	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.135	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	20.84	k star (bias corrected MLE)	15.21
Theta hat (MLE)	8316	Theta star (bias corrected MLE)	11389
nu hat (MLE)	458.4	nu star (bias corrected)	334.7
MLE Mean (bias corrected)	173273	MLE Sd (bias corrected)	44424
		Approximate Chi Square Value (0.05)	293.3
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	287
Assuming Gamma Distribution			
95% Approximate Gamma UCL 197724		95% Adjusted Gamma UCL 202079	
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.96	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.13	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.71	Mean of logged Data	12.04
Maximum of Logged Data	12.4	SD of logged Data	0.231
Assuming Lognormal Distribution			
95% H-UCL 199276		90% Chebyshev (MVUE) UCL 209561	
95% Chebyshev (MVUE) UCL 226005		97.5% Chebyshev (MVUE) UCL 248829	
99% Chebyshev (MVUE) UCL 293662			

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	193184	95% BCA Bootstrap UCL	193182
95% Standard Bootstrap UCL	192306	95% Bootstrap-t UCL	198819
95% Hall's Bootstrap UCL	197685	95% Percentile Bootstrap UCL	192364
90% Chebyshev(Mean, Sd) UCL	209587	95% Chebyshev(Mean, Sd) UCL	226037
97.5% Chebyshev(Mean, Sd) UCL	248868	99% Chebyshev(Mean, Sd) UCL	293715
Suggested UCL to Use			
95% Student's-t UCL 195212			
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 195212
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Strontium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	92.7	Mean	517
Maximum	1280	Median	445
SD	402.4	Std. Error of Mean	121.3
Coefficient of Variation	0.778	Skewness	0.776
Normal GOF Test			
Shapiro Wilk Test Statistic	0.902	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.159	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	736.9	95% Adjusted-CLT UCL (Chen-1995)	746.9
		95% Modified-t UCL (Johnson-1978)	741.6
Gamma GOF Test			
A-D Test Statistic	0.271	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.144	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.259	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.658	k star (bias corrected MLE)	1.266
Theta hat (MLE)	311.8	Theta star (bias corrected MLE)	408.2
nu hat (MLE)	36.47	nu star (bias corrected)	27.86
MLE Mean (bias corrected)	517	MLE Sd (bias corrected)	459.4
		Approximate Chi Square Value (0.05)	16.82
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	15.44
Assuming Gamma Distribution			
95% Approximate Gamma UCL	856.3	95% Adjusted Gamma UCL	933.1
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.529	Mean of logged Data	5.917
Maximum of Logged Data	7.155	SD of logged Data	0.907
Assuming Lognormal Distribution			
95% H-UCL	1258	90% Chebyshev (MVUE) UCL	994.7
95% Chebyshev (MVUE) UCL	1203	97.5% Chebyshev (MVUE) UCL	1493
99% Chebyshev (MVUE) UCL	2063		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	716.5	95% BCA Bootstrap UCL	726.9
95% Standard Bootstrap UCL	705.9	95% Bootstrap-t UCL	772.2
95% Hall's Bootstrap UCL	734.4	95% Percentile Bootstrap UCL	711.3
90% Chebyshev(Mean, Sd) UCL	880.9	95% Chebyshev(Mean, Sd) UCL	1046
97.5% Chebyshev(Mean, Sd) UCL	1275	99% Chebyshev(Mean, Sd) UCL	1724
Suggested UCL to Use			
95% Student's-t UCL	736.9		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 736.9
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Uranium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	17.3	Mean	33.18
Maximum	50.6	Median	32.7
SD	10.58	Std. Error of Mean	3.19
Coefficient of Variation	0.319	Skewness	0.385
Normal GOF Test			
Shapiro Wilk Test Statistic	0.949	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.167	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	38.96	95% Adjusted-CLT UCL (Chen-1995)	38.83
		95% Modified-t UCL (Johnson-1978)	39.03
Gamma GOF Test			
A-D Test Statistic	0.208	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.13	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	10.58	k star (bias corrected MLE)	7.755
Theta hat (MLE)	3.136	Theta star (bias corrected MLE)	4.279
nu hat (MLE)	232.8	nu star (bias corrected)	170.6
MLE Mean (bias corrected)	33.18	MLE Sd (bias corrected)	11.92
		Approximate Chi Square Value (0.05)	141.4
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	137.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL	40.03	95% Adjusted Gamma UCL	41.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.964	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.851	Mean of logged Data	3.454
Maximum of Logged Data	3.924	SD of logged Data	0.33
Assuming Lognormal Distribution			
95% H-UCL	41.06	90% Chebyshev (MVUE) UCL	43.24
95% Chebyshev (MVUE) UCL	47.78	97.5% Chebyshev (MVUE) UCL	54.08
99% Chebyshev (MVUE) UCL	66.45		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	38.43	95% BCA Bootstrap UCL	38.5
95% Standard Bootstrap UCL	38.23	95% Bootstrap-t UCL	39.49
95% Hall's Bootstrap UCL	40.46	95% Percentile Bootstrap UCL	38.39
90% Chebyshev(Mean, Sd) UCL	42.75	95% Chebyshev(Mean, Sd) UCL	47.09
97.5% Chebyshev(Mean, Sd) UCL	53.11	99% Chebyshev(Mean, Sd) UCL	64.93
Suggested UCL to Use			
95% Student's-t UCL	38.96		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 38.96
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Zinc (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	1.06	Mean	7.206
Maximum	21.5	Median	5.05
SD	6.374	Std. Error of Mean	1.922
Coefficient of Variation	0.884	Skewness	1.252
Normal GOF Test			
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.185	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	10.69	95% Adjusted-CLT UCL (Chen-1995)	11.14
		95% Modified-t UCL (Johnson-1978)	10.81
Gamma GOF Test			
A-D Test Statistic	0.224	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.152	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.26	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.405	k star (bias corrected MLE)	1.083
Theta hat (MLE)	5.129	Theta star (bias corrected MLE)	6.657
nu hat (MLE)	30.91	nu star (bias corrected)	23.82
MLE Mean (bias corrected)	7.206	MLE Sd (bias corrected)	6.926
		Approximate Chi Square Value (0.05)	13.71
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	12.47
Assuming Gamma Distribution			
95% Approximate Gamma UCL	12.52	95% Adjusted Gamma UCL	13.76
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.136	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.0583	Mean of logged Data	1.579
Maximum of Logged Data	3.068	SD of logged Data	0.991
Assuming Lognormal Distribution			
95% H-UCL	20.18	90% Chebyshev (MVUE) UCL	14.55
95% Chebyshev (MVUE) UCL	17.76	97.5% Chebyshev (MVUE) UCL	22.22
99% Chebyshev (MVUE) UCL	30.97		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	10.37	95% BCA Bootstrap UCL	11.15
95% Standard Bootstrap UCL	10.24	95% Bootstrap-t UCL	12.24
95% Hall's Bootstrap UCL	12.17	95% Percentile Bootstrap UCL	10.49
90% Chebyshev(Mean, Sd) UCL	12.97	95% Chebyshev(Mean, Sd) UCL	15.58
97.5% Chebyshev(Mean, Sd) UCL	19.21	99% Chebyshev(Mean, Sd) UCL	26.33
Suggested UCL to Use			
95% Student's-t UCL	10.69		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 10.69
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Chloride (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	14600	Mean	29909
Maximum	51400	Median	32200
SD	11393	Std. Error of Mean	3435
Coefficient of Variation	0.381	Skewness	0.473
Normal GOF Test			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	36135	95% Adjusted-CLT UCL (Chen-1995)	36083
		95% Modified-t UCL (Johnson-1978)	36217
Gamma GOF Test			
A-D Test Statistic	0.271	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.73	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.173	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	7.493	k star (bias corrected MLE)	5.51
Theta hat (MLE)	3992	Theta star (bias corrected MLE)	5428
nu hat (MLE)	164.8	nu star (bias corrected)	121.2
MLE Mean (bias corrected)	29909	MLE Sd (bias corrected)	12742
		Approximate Chi Square Value (0.05)	96.79
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	93.24
Assuming Gamma Distribution			
95% Approximate Gamma UCL	37456	95% Adjusted Gamma UCL	38884
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.187	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.589	Mean of logged Data	10.24
Maximum of Logged Data	10.85	SD of logged Data	0.393
Assuming Lognormal Distribution			
95% H-UCL	38902	90% Chebyshev (MVUE) UCL	40736
95% Chebyshev (MVUE) UCL	45620	97.5% Chebyshev (MVUE) UCL	52399
99% Chebyshev (MVUE) UCL	65715		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	35559	95% BCA Bootstrap UCL	35545
95% Standard Bootstrap UCL	35208	95% Bootstrap-t UCL	36887
95% Hall's Bootstrap UCL	36523	95% Percentile Bootstrap UCL	35282
90% Chebyshev(Mean, Sd) UCL	40215	95% Chebyshev(Mean, Sd) UCL	44883
97.5% Chebyshev(Mean, Sd) UCL	51362	99% Chebyshev(Mean, Sd) UCL	64089

Suggested UCL to Use

95% Student's-t UCL 36135

User Identified Distribution: N

User Selected UCL: 95% Student's-t UCL

36135

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Nitrate as Nitrogen (mg/kg)

General Statistics

Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	10100	Mean	15909
Maximum	26400	Median	16100
SD	4837	Std. Error of Mean	1459
Coefficient of Variation	0.304	Skewness	0.893

Normal GOF Test

Shapiro Wilk Test Statistic	0.934	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.166	Lilliefors GOF Test
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	18553	95% Adjusted-CLT UCL (Chen-1995)	18728
		95% Modified-t UCL (Johnson-1978)	18618

Gamma GOF Test

A-D Test Statistic	0.205	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.127	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	12.65	k star (bias corrected MLE)	9.26
Theta hat (MLE)	1258	Theta star (bias corrected MLE)	1718
nu hat (MLE)	278.3	nu star (bias corrected)	203.7
MLE Mean (bias corrected)	15909	MLE Sd (bias corrected)	5228
		Approximate Chi Square Value (0.05)	171.7
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	166.9

Assuming Gamma Distribution

95% Approximate Gamma UCL	18877	95% Adjusted Gamma UCL	19419
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.967	Shapiro Wilk Lognormal GOF Test
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.121	Lilliefors Lognormal GOF Test
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level

Data appear Lognormal at 10% Significance Level

Lognormal Statistics

Minimum of Logged Data	9.22	Mean of logged Data	9.635
Maximum of Logged Data	10.18	SD of logged Data	0.295

Assuming Lognormal Distribution			
95% H-UCL	19136	90% Chebyshev (MVUE) UCL	20173
95% Chebyshev (MVUE) UCL	22109	97.5% Chebyshev (MVUE) UCL	24796
99% Chebyshev (MVUE) UCL	30074		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	18308	95% BCA Bootstrap UCL	18418
95% Standard Bootstrap UCL	18168	95% Bootstrap-t UCL	19264
95% Hall's Bootstrap UCL	20212	95% Percentile Bootstrap UCL	18155
90% Chebyshev(Mean, Sd) UCL	20285	95% Chebyshev(Mean, Sd) UCL	22267
97.5% Chebyshev(Mean, Sd) UCL	25018	99% Chebyshev(Mean, Sd) UCL	30421
Suggested UCL to Use			
95% Student's-t UCL	18553		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 18553
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

pH (s.u.)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	7.16	Mean	7.633
Maximum	8.41	Median	7.48
SD	0.4	Std. Error of Mean	0.121
Coefficient of Variation	0.0524	Skewness	1.046
Normal GOF Test			
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.24	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	7.851	95% Adjusted-CLT UCL (Chen-1995)	7.872
		95% Modified-t UCL (Johnson-1978)	7.858
Gamma GOF Test			
A-D Test Statistic	0.585	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.726	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.234	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.254	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	411.5	k star (bias corrected MLE)	299.3
Theta hat (MLE)	0.0185	Theta star (bias corrected MLE)	0.0255
nu hat (MLE)	9053	nu star (bias corrected)	6585
MLE Mean (bias corrected)	7.633	MLE Sd (bias corrected)	0.441
		Approximate Chi Square Value (0.05)	6398
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	6367
Assuming Gamma Distribution			
95% Approximate Gamma UCL	7.857	95% Adjusted Gamma UCL	7.894
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.231	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data Not Lognormal at 10% Significance Level	
Data appear Approximate Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.969	Mean of logged Data	2.031
Maximum of Logged Data	2.129	SD of logged Data	0.0514
Assuming Lognormal Distribution			
95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	7.987
95% Chebyshev (MVUE) UCL	8.148	97.5% Chebyshev (MVUE) UCL	8.371
99% Chebyshev (MVUE) UCL	8.809		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs			
95% CLT UCL	7.831	95% BCA Bootstrap UCL	7.857
95% Standard Bootstrap UCL	7.821	95% Bootstrap-t UCL	7.966
95% Hall's Bootstrap UCL	7.996	95% Percentile Bootstrap UCL	7.825
90% Chebyshev(Mean, Sd) UCL	7.995	95% Chebyshev(Mean, Sd) UCL	8.159
97.5% Chebyshev(Mean, Sd) UCL	8.386	99% Chebyshev(Mean, Sd) UCL	8.833
Suggested UCL to Use			
95% Student's-t UCL	7.851		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Sulfate (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	230000	Mean	466182
Maximum	590000	Median	495000
SD	106479	Std. Error of Mean	32105
Coefficient of Variation	0.228	Skewness	-1.024
Normal GOF Test			
Shapiro Wilk Test Statistic	0.923	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 524370		95% Adjusted-CLT UCL (Chen-1995) 508400	
		95% Modified-t UCL (Johnson-1978) 522718	
Gamma GOF Test			
A-D Test Statistic	0.501	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.729	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.175	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	17.09	k star (bias corrected MLE)	12.49
Theta hat (MLE)	27283	Theta star (bias corrected MLE)	37332
nu hat (MLE)	375.9	nu star (bias corrected)	274.7
MLE Mean (bias corrected)	466182	MLE Sd (bias corrected)	131921
		Approximate Chi Square Value (0.05)	237.3
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	231.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL 539615		95% Adjusted Gamma UCL 552816	
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.843	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.175	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Approximate Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	12.35	Mean of logged Data	13.02
Maximum of Logged Data	13.29	SD of logged Data	0.271
Assuming Lognormal Distribution			
95% H-UCL 553564		90% Chebyshev (MVUE) UCL 583377	
95% Chebyshev (MVUE) UCL 635673		97.5% Chebyshev (MVUE) UCL 708258	
99% Chebyshev (MVUE) UCL 850838			

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL 518989		95% BCA Bootstrap UCL 510636	
95% Standard Bootstrap UCL 517193		95% Bootstrap-t UCL 516463	
95% Hall's Bootstrap UCL 511245		95% Percentile Bootstrap UCL 513909	
90% Chebyshev(Mean, Sd) UCL 562496		95% Chebyshev(Mean, Sd) UCL 606123	
97.5% Chebyshev(Mean, Sd) UCL 666675		99% Chebyshev(Mean, Sd) UCL 785619	
Suggested UCL to Use			
95% Student's-t UCL 524370			
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 524370
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

TCLP Barium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.0234	Mean	0.0478
Maximum	0.0767	Median	0.0489
SD	0.019	Std. Error of Mean	0.00574
Coefficient of Variation	0.399	Skewness	0.216
Normal GOF Test			
Shapiro Wilk Test Statistic	0.919	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.185	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0582	95% Adjusted-CLT UCL (Chen-1995)	0.0576
		95% Modified-t UCL (Johnson-1978)	0.0582
Gamma GOF Test			
A-D Test Statistic	0.409	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.194	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	6.575	k star (bias corrected MLE)	4.843
Theta hat (MLE)	0.00726	Theta star (bias corrected MLE)	0.00986
nu hat (MLE)	144.7	nu star (bias corrected)	106.5
MLE Mean (bias corrected)	0.0478	MLE Sd (bias corrected)	0.0217
		Approximate Chi Square Value (0.05)	83.72
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	80.43
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0608	95% Adjusted Gamma UCL	0.0633
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.916	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.179	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-3.755	Mean of logged Data	-3.12
Maximum of Logged Data	-2.568	SD of logged Data	0.423
Assuming Lognormal Distribution			
95% H-UCL	0.0638	90% Chebyshev (MVUE) UCL	0.0665
95% Chebyshev (MVUE) UCL	0.0749	97.5% Chebyshev (MVUE) UCL	0.0866
99% Chebyshev (MVUE) UCL	0.11		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.0572	95% BCA Bootstrap UCL	0.0569
95% Standard Bootstrap UCL	0.0568	95% Bootstrap-t UCL	0.0586
95% Hall's Bootstrap UCL	0.0565	95% Percentile Bootstrap UCL	0.0569
90% Chebyshev(Mean, Sd) UCL	0.065	95% Chebyshev(Mean, Sd) UCL	0.0728
97.5% Chebyshev(Mean, Sd) UCL	0.0836	99% Chebyshev(Mean, Sd) UCL	0.105
Suggested UCL to Use			
95% Student's-t UCL	0.0582		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 0.0582
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

TCLP Selenium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	0.682	Mean	1.045
Maximum	1.75	Median	0.964
SD	0.371	Std. Error of Mean	0.112
Coefficient of Variation	0.355	Skewness	0.928
Normal GOF Test			
Shapiro Wilk Test Statistic	0.874	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.792	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.19	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.291	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.248	95% Adjusted-CLT UCL (Chen-1995)	1.262
		95% Modified-t UCL (Johnson-1978)	1.253
Gamma GOF Test			
A-D Test Statistic	0.456	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.73	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.187	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.255	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	9.626	k star (bias corrected MLE)	7.062
Theta hat (MLE)	0.109	Theta star (bias corrected MLE)	0.148
nu hat (MLE)	211.8	nu star (bias corrected)	155.4
MLE Mean (bias corrected)	1.045	MLE Sd (bias corrected)	0.393
		Approximate Chi Square Value (0.05)	127.5
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	123.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL	1.273	95% Adjusted Gamma UCL	1.315
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.876	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.231	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.383	Mean of logged Data	-0.00891
Maximum of Logged Data	0.56	SD of logged Data	0.335
Assuming Lognormal Distribution			
95% H-UCL	1.293	90% Chebyshev (MVUE) UCL	1.362
95% Chebyshev (MVUE) UCL	1.506	97.5% Chebyshev (MVUE) UCL	1.706
99% Chebyshev (MVUE) UCL	2.1		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs			
95% CLT UCL	1.229	95% BCA Bootstrap UCL	1.242
95% Standard Bootstrap UCL	1.219	95% Bootstrap-t UCL	1.323
95% Hall's Bootstrap UCL	1.311	95% Percentile Bootstrap UCL	1.228
90% Chebyshev(Mean, Sd) UCL	1.38	95% Chebyshev(Mean, Sd) UCL	1.532
97.5% Chebyshev(Mean, Sd) UCL	1.743	99% Chebyshev(Mean, Sd) UCL	2.157

Suggested UCL to Use

95% Student's-t UCL 1.248

User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL	1.248
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table D-10-2. UCL Statistics for Sediment Data Sets with Non-Detects, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/10/2023 9:28:48 AM
From File	SHP02-02.2301003_Results_Working_g.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Uranium-235/236 (pCi/g)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	10
Number of Detects	10	Number of Non-Detects	1
Number of Distinct Detects	9	Number of Distinct Non-Detects	1
Minimum Detect	0.379	Minimum Non-Detect	0.269
Maximum Detect	1.12	Maximum Non-Detect	0.269
Variance Detects	0.0833	Percent Non-Detects	9.091%
Mean Detects	0.829	SD Detects	0.289
Median Detects	0.935	CV Detects	0.348
Skewness Detects	-0.516	Kurtosis Detects	-1.576
Mean of Logged Detects	-0.254	SD of Logged Detects	0.405
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.866	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.781	Detected Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.225	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.304	Detected Data appear Normal at 1% Significance Level	
Detected Data appear Normal at 1% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.778	KM Standard Error of Mean	0.0975
90KM SD	0.307	95% KM (BCA) UCL	0.932
95% KM (t) UCL	0.955	95% KM (Percentile Bootstrap) UCL	0.932
95% KM (z) UCL	0.938	95% KM Bootstrap t UCL	0.934
90% KM Chebyshev UCL	1.071	95% KM Chebyshev UCL	1.203
97.5% KM Chebyshev UCL	1.387	99% KM Chebyshev UCL	1.748
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.677	Anderson-Darling GOF Test	
5% A-D Critical Value	0.727	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.261	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.267	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	7.663	k star (bias corrected MLE)	5.431
Theta hat (MLE)	0.108	Theta star (bias corrected MLE)	0.153
nu hat (MLE)	153.3	nu star (bias corrected)	108.6
Mean (detects)	0.829		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.296	Mean	0.781
Maximum	1.12	Median	0.921
SD	0.317	CV	0.407
k hat (MLE)	5.485	k star (bias corrected MLE)	4.05
Theta hat (MLE)	0.142	Theta star (bias corrected MLE)	0.193
nu hat (MLE)	120.7	nu star (bias corrected)	89.09
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (89.09, α)	68.33	Adjusted Chi Square Value (89.09, β)	65.37
95% Gamma Approximate UCL	1.018	95% Gamma Adjusted UCL	1.064

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.778	SD (KM)	0.307
Variance (KM)	0.0941	SE of Mean (KM)	0.0975
k hat (KM)	6.434	k star (KM)	4.74
nu hat (KM)	141.6	nu star (KM)	104.3
theta hat (KM)	0.121	theta star (KM)	0.164
80% gamma percentile (KM)	1.052	90% gamma percentile (KM)	1.257
95% gamma percentile (KM)	1.444	99% gamma percentile (KM)	1.839

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (104.28, α)	81.72	Adjusted Chi Square Value (104.28, β)	78.47
95% KM Approximate Gamma UCL	0.993	95% KM Adjusted Gamma UCL	1.034

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.849	Shapiro Wilk GOF Test
10% Shapiro Wilk Critical Value	0.869	Detected Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.265	Lilliefors GOF Test
10% Lilliefors Critical Value	0.241	Detected Data Not Lognormal at 10% Significance Level

Detected Data Not Lognormal at 10% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.781	Mean in Log Scale	-0.339
SD in Original Scale	0.316	SD in Log Scale	0.476
95% t UCL (assumes normality of ROS data)	0.954	95% Percentile Bootstrap UCL	0.933
95% BCA Bootstrap UCL	0.931	95% Bootstrap t UCL	0.939
95% H-UCL (Log ROS)	1.102		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.35	KM Geo Mean	0.704
KM SD (logged)	0.476	95% Critical H Value (KM-Log)	2.145
KM Standard Error of Mean (logged)	0.151	95% H-UCL (KM -Log)	1.09
KM SD (logged)	0.476	95% Critical H Value (KM-Log)	2.145
KM Standard Error of Mean (logged)	0.151		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.766	Mean in Log Scale	-0.413
SD in Original Scale	0.345	SD in Log Scale	0.653
95% t UCL (Assumes normality)	0.954	95% H-Stat UCL	1.342

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 1% Significance Level

Suggested UCL to Use

95% KM (t) UCL0.955

User Identified Distribution:

N

User Selected UCL:

95% KM (t) UCL

0.955

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Arsenic (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	10

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Arsenic (mg/kg) was not processed!

Cadmium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	10

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Cadmium (mg/kg) was not processed!

Lead (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
Number of Detects	5	Number of Non-Detects	6
Number of Distinct Detects	5	Number of Distinct Non-Detects	6
Minimum Detect	0.22	Minimum Non-Detect	0.128
Maximum Detect	1.03	Maximum Non-Detect	0.225
Variance Detects	0.119	Percent Non-Detects	54.55%
Mean Detects	0.414	SD Detects	0.345
Median Detects	0.281	CV Detects	0.834
Skewness Detects	2.194	Kurtosis Detects	4.852
Mean of Logged Detects	-1.076	SD of Logged Detects	0.629

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.635	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.686	Detected Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.434	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.396	Detected Data Not Normal at 1% Significance Level	
Detected Data Not Normal at 1% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.26	KM Standard Error of Mean	0.085
90KM SD	0.252	95% KM (BCA) UCL	0.433
95% KM (t) UCL	0.414	95% KM (Percentile Bootstrap) UCL	0.414
95% KM (z) UCL	0.399	95% KM Bootstrap t UCL	0.58
90% KM Chebyshev UCL	0.515	95% KM Chebyshev UCL	0.63
97.5% KM Chebyshev UCL	0.791	99% KM Chebyshev UCL	1.106
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.911	Anderson-Darling GOF Test	
5% A-D Critical Value	0.683	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.425	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.36	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.724	k star (bias corrected MLE)	1.223
Theta hat (MLE)	0.152	Theta star (bias corrected MLE)	0.339
nu hat (MLE)	27.24	nu star (bias corrected)	12.23
Mean (detects)	0.414		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.194
Maximum	1.03	Median	0.01
SD	0.304	CV	1.568
k hat (MLE)	0.471	k star (bias corrected MLE)	0.403
Theta hat (MLE)	0.411	Theta star (bias corrected MLE)	0.48
nu hat (MLE)	10.37	nu star (bias corrected)	8.875
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (8.88, α)	3.252	Adjusted Chi Square Value (8.88, β)	2.722
95% Gamma Approximate UCL	0.529	95% Gamma Adjusted UCL	0.632
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.26	SD (KM)	0.252
Variance (KM)	0.0635	SE of Mean (KM)	0.085
k hat (KM)	1.061	k star (KM)	0.832
nu hat (KM)	23.35	nu star (KM)	18.31
theta hat (KM)	0.245	theta star (KM)	0.312
80% gamma percentile (KM)	0.423	90% gamma percentile (KM)	0.625
95% gamma percentile (KM)	0.83	99% gamma percentile (KM)	1.313
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (18.31, α)	9.618	Adjusted Chi Square Value (18.31, β)	8.609
95% KM Approximate Gamma UCL	0.494	95% KM Adjusted Gamma UCL	0.552
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk GOF Test	
10% Shapiro Wilk Critical Value	0.806	Detected Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.389	Lilliefors GOF Test	
10% Lilliefors Critical Value	0.319	Detected Data Not Lognormal at 10% Significance Level	
Detected Data Not Lognormal at 10% Significance Level			

TCLP Arsenic (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable TCLP Arsenic (mg/kg) was not processed!

TCLP Cadmium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	2
Number of Detects	1	Number of Non-Detects	10
Number of Distinct Detects	1	Number of Distinct Non-Detects	1

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable TCLP Cadmium (mg/kg) was not processed!

TCLP Chromium (mg/kg)

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	3
Number of Detects	3	Number of Non-Detects	8
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	0.013	Minimum Non-Detect	0.01
Maximum Detect	0.0149	Maximum Non-Detect	0.01
Variance Detects	1.2033E-6	Percent Non-Detects	72.73%
Mean Detects	0.0136	SD Detects	0.0011
Median Detects	0.013	CV Detects	0.0805
Skewness Detects	1.732	Kurtosis Detects	N/A
Mean of Logged Detects	-4.297	SD of Logged Detects	0.0788

Warning: Data set has only 3 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.753	Detected Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.385	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.429	Detected Data appear Normal at 1% Significance Level	

Detected Data appear Approximate Normal at 1% Significance Level
Note GOF tests may be unreliable for small sample sizes

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.011	KM Standard Error of Mean 6.2200E-4	
90KM SD	0.00168	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0121	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.012	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0129	95% KM Chebyshev UCL	0.0137
97.5% KM Chebyshev UCL	0.0149	99% KM Chebyshev UCL	0.0172

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.619	Anderson-Darling GOF Test	
5% A-D Critical Value	0.635	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.427	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.431	Detected data appear Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	238.5	k star (bias corrected MLE)	N/A
Theta hat (MLE)	5.7160E-5	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	1431	nu star (bias corrected)	N/A
Mean (detects)	0.0136		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0112
Maximum	0.0149	Median	0.0102
SD	0.00169	CV	0.151
k hat (MLE)	52.82	k star (bias corrected MLE)	38.48
Theta hat (MLE)	2.1210E-4	Theta star (bias corrected MLE)	2.9117E-4
nu hat (MLE)	1162	nu star (bias corrected)	846.5
Adjusted Level of Significance (β)	0.0278		
Approximate Chi Square Value (846.45, α)	779.9	Adjusted Chi Square Value (846.45, β)	769.5
95% Gamma Approximate UCL	0.0122	95% Gamma Adjusted UCL	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.011	SD (KM)	0.00168
Variance (KM)	2.8372E-6	SE of Mean (KM)	6.2200E-4
k hat (KM)	42.58	k star (KM)	31.03
nu hat (KM)	936.7	nu star (KM)	682.6
theta hat (KM)	2.5814E-4	theta star (KM)	3.5425E-4
80% gamma percentile (KM)	0.0126	90% gamma percentile (KM)	0.0136
95% gamma percentile (KM)	0.0144	99% gamma percentile (KM)	0.0161

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (682.57, α)	623	Adjusted Chi Square Value (682.57, β)	613.7
95% KM Approximate Gamma UCL	0.012	95% KM Adjusted Gamma UCL	0.0122

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test
10% Shapiro Wilk Critical Value	0.789	Detected Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.385	Lilliefors GOF Test
10% Lilliefors Critical Value	0.389	Detected Data appear Lognormal at 10% Significance Level

Detected Data appear Approximate Lognormal at 10% Significance Level

Note GOF tests may be unreliable for small sample sizes

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0109	Mean in Log Scale	-4.54
SD in Original Scale	0.00212	SD in Log Scale	0.193
95% t UCL (assumes normality of ROS data)	0.012	95% Percentile Bootstrap UCL	0.0119
95% BCA Bootstrap UCL	0.0119	95% Bootstrap t UCL	0.0121
95% H-UCL (Log ROS)	0.0122		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.521	KM Geo Mean	0.0109
KM SD (logged)	0.141	95% Critical H Value (KM-Log)	1.815
KM Standard Error of Mean (logged)	0.0521	95% H-UCL (KM -Log)	0.0119
KM SD (logged)	0.141	95% Critical H Value (KM-Log)	1.815
KM Standard Error of Mean (logged)	0.0521		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00735	Mean in Log Scale	-5.025
SD in Original Scale	0.00406	SD in Log Scale	0.469
95% t UCL (Assumes normality)	0.00957	95% H-Stat UCL	0.0101

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 1% Significance Level

Suggested UCL to Use

95% KM (t) UCL 0.0121

User Identified Distribution:	G	User Selected UCL:	95% KM Adjusted Gamma UCL	0.0122
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When a data set follows an approximate distribution passing only one of the GOF tests,
it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

TCLP Lead (mg/kg)

General Statistics

Total Number of Observations	11	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable TCLP Lead (mg/kg) was not processed!

TCLP Mercury (mg/kg)

General Statistics

Total Number of Observations	11	Number of Distinct Observations	1
Number of Detects	0	Number of Non-Detects	11
Number of Distinct Detects	0	Number of Distinct Non-Detects	1

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable TCLP Mercury (mg/kg) was not processed!

TCLP Silver (mg/kg)

General Statistics

Total Number of Observations	11	Number of Distinct Observations	10
Number of Detects	9	Number of Non-Detects	2
Number of Distinct Detects	9	Number of Distinct Non-Detects	1
Minimum Detect	0.0119	Minimum Non-Detect	0.01
Maximum Detect	0.0202	Maximum Non-Detect	0.01
Variance Detects	7.4369E-6	Percent Non-Detects	18.18%
Mean Detects	0.0145	SD Detects	0.00273
Median Detects	0.0138	CV Detects	0.188
Skewness Detects	1.443	Kurtosis Detects	1.464
Mean of Logged Detects	-4.249	SD of Logged Detects	0.174

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.839	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.764	Detected Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.26	Lilliefors GOF Test
1% Lilliefors Critical Value	0.316	Detected Data appear Normal at 1% Significance Level

Detected Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs					
KM Mean	0.0137	KM Standard Error of Mean 9.2640E-4			
90KM SD	0.0029	95% KM (BCA) UCL 0.0152			
95% KM (t) UCL	0.0153	95% KM (Percentile Bootstrap) UCL 0.0152			
95% KM (z) UCL	0.0152	95% KM Bootstrap t UCL 0.016			
90% KM Chebyshev UCL	0.0164	95% KM Chebyshev UCL 0.0177			
97.5% KM Chebyshev UCL	0.0194	99% KM Chebyshev UCL 0.0229			
Gamma GOF Tests on Detected Observations Only					
A-D Test Statistic	0.578	Anderson-Darling GOF Test			
5% A-D Critical Value	0.721	Detected data appear Gamma Distributed at 5% Significance Level			
K-S Test Statistic	0.236	Kolmogorov-Smirnov GOF			
5% K-S Critical Value	0.279	Detected data appear Gamma Distributed at 5% Significance Level			
Detected data appear Gamma Distributed at 5% Significance Level					
Note GOF tests may be unreliable for small sample sizes					
Gamma Statistics on Detected Data Only					
k hat (MLE)	35.45	k star (bias corrected MLE) 23.71			
Theta hat (MLE)	4.0842E-4	Theta star (bias corrected MLE) 6.1072E-4			
nu hat (MLE)	638.1	nu star (bias corrected) 426.7			
Mean (detects)	0.0145				
Gamma ROS Statistics using Imputed Non-Detects					
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs					
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)					
For such situations, GROS method may yield incorrect values of UCLs and BTVs					
This is especially true when the sample size is small.					
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates					
Minimum	0.01	Mean	0.0137		
Maximum	0.0202	Median	0.0131		
SD	0.00304	CV	0.222		
k hat (MLE)	23.98	k star (bias corrected MLE)	17.5		
Theta hat (MLE)	5.6981E-4	Theta star (bias corrected MLE)	7.8077E-4		
nu hat (MLE)	527.5	nu star (bias corrected)	385		
Adjusted Level of Significance (β)	0.0278				
Approximate Chi Square Value (385.00, α)	340.5	Adjusted Chi Square Value (385.00, β)	333.7		
95% Gamma Approximate UCL	0.0154	95% Gamma Adjusted UCL	0.0158		
Estimates of Gamma Parameters using KM Estimates					
Mean (KM)	0.0137	SD (KM)	0.0029		
Variance (KM)	8.3914E-6	SE of Mean (KM)	9.2640E-4		
k hat (KM)	22.25	k star (KM)	16.24		
nu hat (KM)	489.5	nu star (KM)	357.3		
theta hat (KM)	6.1414E-4	theta star (KM)	8.4129E-4		
80% gamma percentile (KM)	0.0164	90% gamma percentile (KM)	0.0181		
95% gamma percentile (KM)	0.0197	99% gamma percentile (KM)	0.0228		

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (357.31, α)	314.5	Adjusted Chi Square Value (357.31, β)	308
95% KM Approximate Gamma UCL	0.0155	95% KM Adjusted Gamma UCL	0.0159
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.879	Shapiro Wilk GOF Test	
10% Shapiro Wilk Critical Value	0.859	Detected Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
10% Lilliefors Critical Value	0.252	Detected Data appear Lognormal at 10% Significance Level	
Detected Data appear Lognormal at 10% Significance Level			
Note GOF tests may be unreliable for small sample sizes			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0136	Mean in Log Scale	-4.325
SD in Original Scale	0.00318	SD in Log Scale	0.23
95% t UCL (assumes normality of ROS data)	0.0153	95% Percentile Bootstrap UCL	0.0152
95% BCA Bootstrap UCL	0.0153	95% Bootstrap t UCL	0.0157
95% H-UCL (Log ROS)	0.0156		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-4.314	KM Geo Mean	0.0134
KM SD (logged)	0.202	95% Critical H Value (KM-Log)	1.862
KM Standard Error of Mean (logged)	0.0646	95% H-UCL (KM -Log)	0.0154
KM SD (logged)	0.202	95% Critical H Value (KM-Log)	1.862
KM Standard Error of Mean (logged)	0.0646		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0128	Mean in Log Scale	-4.44
SD in Original Scale	0.00454	SD in Log Scale	0.452
95% t UCL (Assumes normality)	0.0152	95% H-Stat UCL	0.0177
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 1% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0153		
User Identified Distribution:	N	User Selected UCL:	95% KM (t) UCL 0.0153
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Table D-10-3. ProUCL Inputs for Uncensored Full Sediment Data Sets, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Gross Alpha (pCi/g)	D_Gross Alpha (pCi/g)	Gross Beta (pCi/g)	D_Gross Beta (pCi/g)	Uranium-233/234 (pCi/g)	D_Uranium-233/234 (pCi/g)	Uranium-238 (pCi/g)	D_Uranium-238 (pCi/g)	Barium (mg/kg)	D_Barium (mg/kg)
18.7	1	19.1	1	12.6	1	10.3	1	1.83	1
23.7	1	29.2	1	19.2	1	17.1	1	4.42	1
42	1	51.7	1	18.7	1	16.4	1	6.88	1
5.92	1	5.85	1	4.74	1	4.33	1	0.741	1
12.1	1	16.3	1	9.49	1	8.74	1	4.38	1
7.72	1	9.25	1	5.58	1	4.44	1	0.886	1
10.9	1	11.9	1	6.17	1	5.18	1	1.63	1
20.8	1	48.3	1	13.2	1	11.8	1	5.05	1
14.1	1	15.6	1	10.2	1	8.65	1	2.03	1
18.1	1	21.3	1	15.2	1	13.5	1	3.67	1
17.9	1	26	1	17	1	15.2	1	19.7	1

Table continued

Calcium (mg/kg)	D_Calcium (mg/kg)	Magnesium (mg/kg)	D_Magnesium (mg/kg)	Manganese (mg/kg)	D_Manganese (mg/kg)	Potassium (mg/kg)	D_Potassium (mg/kg)	Selenium (mg/kg)	D_Selenium (mg/kg)	Sodium (mg/kg)
5770	1	37700	1	31.3	1	4940	1	34.7	1	244000
10100	1	40400	1	78.7	1	5870	1	32.3	1	200000
84100	1	17600	1	261	1	2320	1	26.8	1	148000
4480	1	27000	1	15.6	1	2790	1	22.4	1	156000
40300	1	43200	1	206	1	3940	1	23.5	1	165000
4960	1	43600	1	16.3	1	4840	1	28.8	1	225000
19500	1	43100	1	40.8	1	4490	1	21.4	1	143000
88700	1	33100	1	96.8	1	3990	1	22	1	124000
21500	1	27200	1	49.3	1	3340	1	23.4	1	179000
22700	1	42100	1	112	1	5440	1	31.5	1	200000
29200	1	53400	1	288	1	6800	1	26.6	1	122000

Table continued

D_Sodium (mg/kg)	Strontium (mg/kg)	D_Strontium (mg/kg)	Uranium (mg/kg)	D_Uranium (mg/kg)	Zinc (mg/kg)	D_Zinc (mg/kg)	Chloride (mg/kg)	D_Chloride (mg/kg)	Nitrate as Nitrogen (mg/kg)
1	135	1	37.1	1	2.68	1	18100	1	12000
1	208	1	29.5	1	5.05	1	20100	1	13300
1	1280	1	32.7	1	14.1	1	33800	1	16300
1	92.7	1	17.3	1	1.1	1	32200	1	10100
1	912	1	24.6	1	11.8	1	14600	1	10200
1	126	1	21.5	1	1.06	1	51400	1	26400
1	335	1	28.6	1	3.05	1	33800	1	17800
1	1030	1	37.3	1	7.88	1	24300	1	16100
1	445	1	35.9	1	3.32	1	36200	1	17800
1	537	1	50.6	1	7.73	1	21100	1	14100
1	586	1	49.9	1	21.5	1	43400	1	20900

Table continued

D_Nitrate as Nitrogen (mg/kg)	pH (s.u.)	D_pH (s.u.)	Sulfate (mg/kg)	D_Sulfate (mg/kg)	TCLP Barium (mg/kg)	D_TCLP Barium (mg/kg)	TCLP Selenium (mg/kg)	D_TCLP Selenium (mg/kg)
1	7.61	1	579000	1	0.0281	1	0.894	1
1	7.62	1	520000	1	0.0683	1	1.28	1
1	8.41	1	230000	1	0.0767	1	0.704	1
1	7.48	1	378000	1	0.0276	1	0.995	1
1	8.26	1	495000	1	0.0302	1	0.733	1
1	7.91	1	553000	1	0.0234	1	0.964	1
1	7.36	1	387000	1	0.044	1	1.17	1
1	7.48	1	450000	1	0.0545	1	0.712	1
1	7.29	1	429000	1	0.0489	1	1.75	1
1	7.16	1	590000	1	0.0514	1	1.61	1
1	7.38	1	517000	1	0.0722	1	0.682	1

Table D-10-4. ProUCL Inputs for Sediment Data Sets with Non-Detects, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Uranium-235/236 (pCi/g)	D_Uranium-235/236 (pCi/g)	Arsenic (mg/kg)	D_Arsenic (mg/kg)	Cadmium (mg/kg)	D_Cadmium (mg/kg)	Lead (mg/kg)	D_Lead (mg/kg)	Mercury (mg/kg)	D_Mercury (mg/kg)	Nitrite (mg/kg)	D_Nitrite (mg/kg)	TCLP Arsenic (mg/kg)	D_TCLP Arsenic (mg/kg)
0.666	1	0.715	0	0.0423	0	0.212	0	0.0191	0	40.2	0	0.05	0
1.04	1	0.741	0	0.0439	0	0.22	1	0.0188	0	37.9	0	0.05	0
0.948	1	0.517	0	0.0306	0	0.281	1	0.0118	0	26.8	0	0.05	0
0.269	0	0.512	0	0.0303	0	0.151	0	0.0122	0	25.8	0	0.05	0
0.546	1	0.55	0	0.0326	0	0.245	1	0.0134	0	53.5	0	0.05	0
0.379	1	0.761	0	0.045	0	0.225	0	0.0169	0	36.2	0	0.05	0
0.46	1	0.432	0	0.0256	0	0.128	0	0.00991	0	22.8	0	0.05	0
1.09	1	0.622	0	0.0368	0	0.296	1	0.014	0	33.6	0	0.05	0
0.921	1	0.566	0	0.0335	0	0.167	0	0.0138	0	28.5	0	0.05	0
1.12	1	0.626	0	0.037	0	0.185	0	0.0156	0	72.3	0	0.05	0
1.12	1	0.688	1	0.0633	1	1.03	1	0.0164	0	34	0	0.05	0

Table continued

TCLP Cadmium (mg/kg)	D_TCLP Cadmium (mg/kg)	TCLP Chromium (mg/kg)	D_TCLP Chromium (mg/kg)	TCLP Lead (mg/kg)	D_TCLP Lead (mg/kg)	TCLP Mercury (mg/kg)	D_TCLP Mercury (mg/kg)	TCLP Silver (mg/kg)	D_TCLP Silver (mg/kg)
0.01	0	0.013	1	0.033	0	0.00067	0	0.0119	1
0.01	0	0.01	0	0.033	0	0.00067	0	0.0141	1
0.01	0	0.0149	1	0.033	0	0.00067	0	0.0202	1
0.01	0	0.01	0	0.033	0	0.00067	0	0.0126	1
0.01	0	0.01	0	0.033	0	0.00067	0	0.0124	1
0.01	0	0.01	0	0.033	0	0.00067	0	0.01	0
0.01	0	0.01	0	0.033	0	0.00067	0	0.01	0
0.01	0	0.013	1	0.033	0	0.00067	0	0.0138	1
0.01	0	0.01	0	0.033	0	0.00067	0	0.0131	1
0.01	0	0.01	0	0.033	0	0.00067	0	0.0146	1
0.0123	1	0.01	0	0.033	0	0.00067	0	0.0176	1

Table D-10-5. Transposed Sediment Data for ProUCL with Detect Flags, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Location ID	Sample ID	Date Collected	Gross Alpha (pCi/g)	D_Gross Alpha (pCi/g)	Gross Beta (pCi/g)	D_Gross Beta (pCi/g)	Uranium-233/234 (pCi/g)	D_Uranium-233/234 (pCi/g)	Uranium-235/236 (pCi/g)	D_Uranium-235/236 (pCi/g)	Uranium-238 (pCi/g)
7000	SHP02-02.2301003-002	11/30/2022	18.7	1	19.1	1	12.6	1	0.666	1	10.3
7001	SHP02-02.2301003-003	11/30/2022	23.7	1	29.2	1	19.2	1	1.04	1	17.1
7002	SHP02-02.2301003-004	11/30/2022	42	1	51.7	1	18.7	1	0.948	1	16.4
7003	SHP02-02.2301003-005	11/30/2022	5.92	1	5.85	1	4.74	1	0.269	0	4.33
7004	SHP02-02.2301003-006	11/30/2022	12.1	1	16.3	1	9.49	1	0.546	1	8.74
7005	SHP02-02.2301003-007	11/30/2022	7.72	1	9.25	1	5.58	1	0.379	1	4.44
7006	SHP02-02.2301003-008 /-001	11/29/2022	10.9	1	11.9	1	6.17	1	0.46	1	5.18
7007	SHP02-02.2301003-009	11/29/2022	20.8	1	48.3	1	13.2	1	1.09	1	11.8
7008	SHP02-02.2301003-010	11/29/2022	14.1	1	15.6	1	10.2	1	0.921	1	8.65
7009	SHP02-02.2301003-011	11/29/2022	18.1	1	21.3	1	15.2	1	1.12	1	13.5
7010	SHP02-02.2301003-012	11/29/2022	17.9	1	26	1	17	1	1.12	1	15.2

Table continued

D_Uranium-238 (pCi/g)	Arsenic (mg/kg)	D_Arsenic (mg/kg)	Barium (mg/kg)	D_Barium (mg/kg)	Cadmium (mg/kg)	D_Cadmium (mg/kg)	Calcium (mg/kg)	D_Calcium (mg/kg)	Lead (mg/kg)	D_Lead (mg/kg)	Magnesium (mg/kg)	D_Magnesium (mg/kg)	Manganese (mg/kg)
1	0.715	0	1.83	1	0.0423	0	5770	1	0.212	0	37700	1	31.3
1	0.741	0	4.42	1	0.0439	0	10100	1	0.22	1	40400	1	78.7
1	0.517	0	6.88	1	0.0306	0	84100	1	0.281	1	17600	1	261
1	0.512	0	0.741	1	0.0303	0	4480	1	0.151	0	27000	1	15.6
1	0.55	0	4.38	1	0.0326	0	40300	1	0.245	1	43200	1	206
1	0.761	0	0.886	1	0.045	0	4960	1	0.225	0	43600	1	16.3
1	0.432	0	1.63	1	0.0256	0	19500	1	0.128	0	43100	1	40.8
1	0.622	0	5.05	1	0.0368	0	88700	1	0.296	1	33100	1	96.8
1	0.566	0	2.03	1	0.0335	0	21500	1	0.167	0	27200	1	49.3
1	0.626	0	3.67	1	0.037	0	22700	1	0.185	0	42100	1	112
1	0.688	1	19.7	1	0.0633	1	29200	1	1.03	1	53400	1	288

Table continued

D_Manganese (mg/kg)	Mercury (mg/kg)	D_Mercury (mg/kg)	Potassium (mg/kg)	D_Potassium (mg/kg)	Selenium (mg/kg)	D_Selenium (mg/kg)	Sodium (mg/kg)	D_Sodium (mg/kg)	Strontium (mg/kg)	D_Strontium (mg/kg)	Uranium (mg/kg)	D_Uranium (mg/kg)
1	0.0191	0	4940	1	34.7	1	244000	1	135	1	37.1	1
1	0.0188	0	5870	1	32.3	1	200000	1	208	1	29.5	1
1	0.0118	0	2320	1	26.8	1	148000	1	1280	1	32.7	1
1	0.0122	0	2790	1	22.4	1	156000	1	92.7	1	17.3	1
1	0.0134	0	3940	1	23.5	1	165000	1	912	1	24.6	1
1	0.0169	0	4840	1	28.8	1	225000	1	126	1	21.5	1
1	0.00991	0	4490	1	21.4	1	143000	1	335	1	28.6	1
1	0.014	0	3990	1	22	1	124000	1	1030	1	37.3	1
1	0.0138	0	3340	1	23.4	1	179000	1	445	1	35.9	1
1	0.0156	0	5440	1	31.5	1	200000	1	537	1	50.6	1
1	0.0164	0	6800	1	26.6	1	122000	1	586	1	49.9	1

Table continued

Zinc (mg/kg)	D_Zinc (mg/kg)	Chloride (mg/kg)	D_Chloride (mg/kg)	Nitrate as Nitrogen (mg/kg)	D_Nitrate as Nitrogen (mg/kg)	Nitrite (mg/kg)	D_Nitrite (mg/kg)	pH (s.u.)	D_pH (s.u.)
2.68	1	18100	1	12000	1	40.2	0	7.61	1
5.05	1	20100	1	13300	1	37.9	0	7.62	1
14.1	1	33800	1	16300	1	26.8	0	8.41	1
1.1	1	32200	1	10100	1	25.8	0	7.48	1
11.8	1	14600	1	10200	1	53.5	0	8.26	1
1.06	1	51400	1	26400	1	36.2	0	7.91	1
3.05	1	33800	1	17800	1	22.8	0	7.36	1
7.88	1	24300	1	16100	1	33.6	0	7.48	1
3.32	1	36200	1	17800	1	28.5	0	7.29	1
7.73	1	21100	1	14100	1	72.3	0	7.16	1
21.5	1	43400	1	20900	1	34	0	7.38	1

Table continued

Sulfate (mg/kg)	D_Sulfate (mg/kg)	TCLP Arsenic (mg/kg)	D_TCLP Arsenic (mg/kg)	TCLP Barium (mg/kg)	D_TCLP Barium (mg/kg)	TCLP Cadmium (mg/kg)	D_TCLP Cadmium (mg/kg)	TCLP Chromium (mg/kg)
579000	1	0.05	0	0.0281	1	0.01	0	0.013
520000	1	0.05	0	0.0683	1	0.01	0	0.01
230000	1	0.05	0	0.0767	1	0.01	0	0.0149
378000	1	0.05	0	0.0276	1	0.01	0	0.01
495000	1	0.05	0	0.0302	1	0.01	0	0.01
553000	1	0.05	0	0.0234	1	0.01	0	0.01
387000	1	0.05	0	0.044	1	0.01	0	0.01
450000	1	0.05	0	0.0545	1	0.01	0	0.013
429000	1	0.05	0	0.0489	1	0.01	0	0.01
590000	1	0.05	0	0.0514	1	0.01	0	0.01
517000	1	0.05	0	0.0722	1	0.0123	1	0.01

Table continued

D_TCLP Chromium (mg/kg)	TCLP Lead (mg/kg)	D_TCLP Lead (mg/kg)	TCLP Mercury (mg/kg)	D_TCLP Mercury (mg/kg)	TCLP Selenium (mg/kg)	D_TCLP Selenium (mg/kg)	TCLP Silver (mg/kg)	D_TCLP Silver (mg/kg)
1	0.033	0	0.00067	0	0.894	1	0.0119	1
0	0.033	0	0.00067	0	1.28	1	0.0141	1
1	0.033	0	0.00067	0	0.704	1	0.0202	1
0	0.033	0	0.00067	0	0.995	1	0.0126	1
0	0.033	0	0.00067	0	0.733	1	0.0124	1
0	0.033	0	0.00067	0	0.964	1	0.01	0
0	0.033	0	0.00067	0	1.17	1	0.01	0
1	0.033	0	0.00067	0	0.712	1	0.0138	1
0	0.033	0	0.00067	0	1.75	1	0.0131	1
0	0.033	0	0.00067	0	1.61	1	0.0146	1
0	0.033	0	0.00067	0	0.682	1	0.0176	1

Table D-10-6. Sediment Data with ProUCL Detect Flags, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Parameter	7000		7001		7002		7003		7004	
	SHP02-02.2301003-002		SHP02-02.2301003-003		SHP02-02.2301003-004		SHP02-02.2301003-005		SHP02-02.2301003-006	
	11/30/2022		11/30/2022		11/30/2022		11/30/2022		11/30/2022	
	Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a
Gross Alpha (pCi/g)	18.7	1	23.7	1	42	1	5.92	1	12.1	1
Gross Beta (pCi/g)	19.1	1	29.2	1	51.7	1	5.85	1	16.3	1
Uranium-233/234 (pCi/g)	12.6	1	19.2	1	18.7	1	4.74	1	9.49	1
Uranium-235/236 (pCi/g)	0.666	1	1.04	1	0.948	1	0.269	0	0.546	1
Uranium-238 (pCi/g)	10.3	1	17.1	1	16.4	1	4.33	1	8.74	1
Arsenic (mg/kg)	0.715	0	0.741	0	0.517	0	0.512	0	0.55	0
Barium (mg/kg)	1.83	1	4.42	1	6.88	1	0.741	1	4.38	1
Cadmium (mg/kg)	0.0423	0	0.0439	0	0.0306	0	0.0303	0	0.0326	0
Calcium (mg/kg)	5770	1	10100	1	84100	1	4480	1	40300	1
Lead (mg/kg)	0.212	0	0.22	1	0.281	1	0.151	0	0.245	1
Magnesium (mg/kg)	37700	1	40400	1	17600	1	27000	1	43200	1
Manganese (mg/kg)	31.3	1	78.7	1	261	1	15.6	1	206	1
Mercury (mg/kg)	0.0191	0	0.0188	0	0.0118	0	0.0122	0	0.0134	0
Potassium (mg/kg)	4940	1	5870	1	2320	1	2790	1	3940	1
Selenium (mg/kg)	34.7	1	32.3	1	26.8	1	22.4	1	23.5	1
Sodium (mg/kg)	244000	1	200000	1	148000	1	156000	1	165000	1
Strontium (mg/kg)	135	1	208	1	1280	1	92.7	1	912	1
Uranium (mg/kg)	37.1	1	29.5	1	32.7	1	17.3	1	24.6	1
Zinc (mg/kg)	2.68	1	5.05	1	14.1	1	1.1	1	11.8	1
Chloride (mg/kg)	18100	1	20100	1	33800	1	32200	1	14600	1
Nitrate as Nitrogen (mg/kg)	12000	1	13300	1	16300	1	10100	1	10200	1
Nitrite (mg/kg)	40.2	0	37.9	0	26.8	0	25.8	0	53.5	0
pH (s.u.)	7.61	1	7.62	1	8.41	1	7.48	1	8.26	1
Sulfate (mg/kg)	579000	1	520000	1	230000	1	378000	1	495000	1
TCLP Arsenic (mg/kg)	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0
TCLP Barium (mg/kg)	0.0281	1	0.0683	1	0.0767	1	0.0276	1	0.0302	1
TCLP Cadmium (mg/kg)	0.01	0	0.01	0	0.01	0	0.01	0	0.01	0
TCLP Chromium (mg/kg)	0.013	1	0.01	0	0.0149	1	0.01	0	0.01	0
TCLP Lead (mg/kg)	0.033	0	0.033	0	0.033	0	0.033	0	0.033	0
TCLP Mercury (mg/kg)	0.00067	0	0.00067	0	0.00067	0	0.00067	0	0.00067	0
TCLP Selenium (mg/kg)	0.894	1	1.28	1	0.704	1	0.995	1	0.733	1
TCLP Silver (mg/kg)	0.0119	1	0.0141	1	0.0202	1	0.0126	1	0.0124	1

7005 SHP02-02.2301003-007 11/30/2022		7006 SHP02-02.2301003-008 /-001 11/29/2022		7007 SHP02-02.2301003-009 11/29/2022		7008 SHP02-02.2301003-010 11/29/2022		7009 SHP02-02.2301003-011 11/29/2022		7010 SHP02-02.2301003-012 11/29/2022	
Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a	Result	Detect Flag ^a
7.72	1	10.9	1	20.8	1	14.1	1	18.1	1	17.9	1
9.25	1	11.9	1	48.3	1	15.6	1	21.3	1	26	1
5.58	1	6.17	1	13.2	1	10.2	1	15.2	1	17	1
0.379	1	0.46	1	1.09	1	0.921	1	1.12	1	1.12	1
4.44	1	5.18	1	11.8	1	8.65	1	13.5	1	15.2	1
0.761	0	0.432	0	0.622	0	0.566	0	0.626	0	0.688	1
0.886	1	1.63	1	5.05	1	2.03	1	3.67	1	19.7	1
0.045	0	0.0256	0	0.0368	0	0.0335	0	0.037	0	0.0633	1
4960	1	19500	1	88700	1	21500	1	22700	1	29200	1
0.225	0	0.128	0	0.296	1	0.167	0	0.185	0	1.03	1
43600	1	43100	1	33100	1	27200	1	42100	1	53400	1
16.3	1	40.8	1	96.8	1	49.3	1	112	1	288	1
0.0169	0	0.00991	0	0.014	0	0.0138	0	0.0156	0	0.0164	0
4840	1	4490	1	3990	1	3340	1	5440	1	6800	1
28.8	1	21.4	1	22	1	23.4	1	31.5	1	26.6	1
225000	1	143000	1	124000	1	179000	1	200000	1	122000	1
126	1	335	1	1030	1	445	1	537	1	586	1
21.5	1	28.6	1	37.3	1	35.9	1	50.6	1	49.9	1
1.06	1	3.05	1	7.88	1	3.32	1	7.73	1	21.5	1
51400	1	33800	1	24300	1	36200	1	21100	1	43400	1
26400	1	17800	1	16100	1	17800	1	14100	1	20900	1
36.2	0	22.8	0	33.6	0	28.5	0	72.3	0	34	0
7.91	1	7.36	1	7.48	1	7.29	1	7.16	1	7.38	1
553000	1	387000	1	450000	1	429000	1	590000	1	517000	1
0.05	0	0.05	0	0.05	0	0.05	0	0.05	0	0.05	0
0.0234	1	0.044	1	0.0545	1	0.0489	1	0.0514	1	0.0722	1
0.01	0	0.01	0	0.01	0	0.01	0	0.01	0	0.0123	1
0.01	0	0.01	0	0.013	1	0.01	0	0.01	0	0.01	0
0.033	0	0.033	0	0.033	0	0.033	0	0.033	0	0.033	0
0.00067	0	0.00067	0	0.00067	0	0.00067	0	0.00067	0	0.00067	0
0.964	1	1.17	1	0.712	1	1.75	1	1.61	1	0.682	1
0.01	0	0.01	0	0.0138	1	0.0131	1	0.0146	1	0.0176	1

Table D-10-7. UCL Statistics for Surface Water Data Sets with no Non-Detects, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/18/2023 6:43:02 PM
From File	Pond SW Stats Working File_c.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Uranium-233/234 (pCi/L)

General Statistics			
Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	14
Minimum	2410	Mean	2435
Maximum	2460	Median	2435
User Identified Distribution:	N/A	User Selected UCL:	Maximum 2460
Warning: This data set only has 2 observations!			
Data set is too small to compute reliable and meaningful statistics and estimates!			
The data set for variable Uranium-233/234 (pCi/L) was not processed!			
It is suggested to collect at least 8 to 10 observations before using these statistical methods!			
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.			

Uranium-235/236 (pCi/L)

General Statistics			
Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	14
Minimum	135	Mean	149
Maximum	163	Median	149
User Identified Distribution:	N/A	User Selected UCL:	Maximum 163
Warning: This data set only has 2 observations!			
Data set is too small to compute reliable and meaningful statistics and estimates!			
The data set for variable Uranium-235/236 (pCi/L) was not processed!			
It is suggested to collect at least 8 to 10 observations before using these statistical methods!			
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.			

Uranium-238 (pCi/L)

General Statistics			
Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	14
Minimum	2070	Mean	2135
Maximum	2200	Median	2135
User Identified Distribution:	N/A	User Selected UCL:	Maximum 2200
Warning: This data set only has 2 observations!			
Data set is too small to compute reliable and meaningful statistics and estimates!			
The data set for variable Uranium-238 (pCi/L) was not processed!			
It is suggested to collect at least 8 to 10 observations before using these statistical methods!			
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.			

Barium (mg/L)

General Statistics			
Total Number of Observations	6	Number of Distinct Observations	5
		Number of Missing Observations	11
Minimum	0.067	Mean	0.0992
Maximum	0.121	Median	0.104
SD	0.0244	Std. Error of Mean	0.00996
Coefficient of Variation	0.246	Skewness	-0.277

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7). The Chebyshev UCL often results in gross overestimates of the mean. Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test		
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.713	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.303	Lilliefors GOF Test
1% Lilliefors Critical Value	0.373	Data appear Normal at 1% Significance Level
Data appear Normal at 1% Significance Level		
Note GOF tests may be unreliable for small sample sizes		

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.119	95% Adjusted-CLT UCL (Chen-1995)	0.114
		95% Modified-t UCL (Johnson-1978)	0.119

Gamma GOF Test			
A-D Test Statistic	0.599	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.697	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.323	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.332	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Gamma Statistics			
k hat (MLE)	18.72	k star (bias corrected MLE)	9.471
Theta hat (MLE)	0.0053	Theta star (bias corrected MLE)	0.0105
nu hat (MLE)	224.6	nu star (bias corrected)	113.6
MLE Mean (bias corrected)	0.0992	MLE Sd (bias corrected)	0.0322
		Approximate Chi Square Value (0.05)	90.04
Adjusted Level of Significance	0.0122	Adjusted Chi Square Value	82.46

Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.125	95% Adjusted Gamma UCL	0.137

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.835	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.826	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.3	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.298	Data Not Lognormal at 10% Significance Level	
Data appear Approximate Lognormal at 10% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Lognormal Statistics			
Minimum of Logged Data	-2.703	Mean of logged Data	-2.338
Maximum of Logged Data	-2.112	SD of logged Data	0.258

Assuming Lognormal Distribution			
95% H-UCL	0.128	90% Chebyshev (MVUE) UCL	0.131
95% Chebyshev (MVUE) UCL	0.145	97.5% Chebyshev (MVUE) UCL	0.165
99% Chebyshev (MVUE) UCL	0.203		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs			
95% CLT UCL	0.116	95% BCA Bootstrap UCL	0.114
95% Standard Bootstrap UCL	0.114	95% Bootstrap-t UCL	0.118
95% Hall's Bootstrap UCL	0.109	95% Percentile Bootstrap UCL	0.114
90% Chebyshev(Mean, Sd) UCL	0.129	95% Chebyshev(Mean, Sd) UCL	0.143
97.5% Chebyshev(Mean, Sd) UCL	0.161	99% Chebyshev(Mean, Sd) UCL	0.198

Suggested UCL to Use

95% Student's-t UCL 0.119

User Identified Distribution:	N/A	User Selected UCL:	Maximum	0.121
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

Boron (mg/L)

General Statistics			
Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	12
Minimum	6.45	Mean	16.29
Maximum	23.7	Median	22.3
SD	8.981	Std. Error of Mean	4.017
Coefficient of Variation	0.551	Skewness	-0.592

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7). The Chebyshev UCL often results in gross overestimates of the mean. Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test			
Shapiro Wilk Test Statistic	0.728	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.686	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.348	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.396	Data appear Normal at 1% Significance Level	

Data appear Normal at 1% Significance Level

Note GOF tests may be unreliable for small sample sizes

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	24.85	95% Adjusted-CLT UCL (Chen-1995)	21.76
		95% Modified-t UCL (Johnson-1978)	24.67

Gamma GOF Test			
A-D Test Statistic	0.864	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.682	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.38	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.359	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics			
k hat (MLE)	3.15	k star (bias corrected MLE)	1.393
Theta hat (MLE)	5.17	Theta star (bias corrected MLE)	11.69
nu hat (MLE)	31.5	nu star (bias corrected)	13.93
MLE Mean (bias corrected)	16.29	MLE Sd (bias corrected)	13.8
		Approximate Chi Square Value (0.05)	6.527
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	4.49

Assuming Gamma Distribution			
95% Approximate Gamma UCL	34.77	95% Adjusted Gamma UCL	50.55

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.71	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.806	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.357	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.319	Data Not Lognormal at 10% Significance Level	

Data Not Lognormal at 10% Significance Level

Lognormal Statistics			
Minimum of Logged Data	1.864	Mean of logged Data	2.623
Maximum of Logged Data	3.165	SD of logged Data	0.691

Assuming Lognormal Distribution			
95% H-UCL	61.33	90% Chebyshev (MVUE) UCL	31.69
95% Chebyshev (MVUE) UCL	38.54	97.5% Chebyshev (MVUE) UCL	48.03
99% Chebyshev (MVUE) UCL	66.69		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	22.89	95% BCA Bootstrap UCL	22.62
95% Standard Bootstrap UCL	22.26	95% Bootstrap-t UCL	24.57
95% Hall's Bootstrap UCL	19.15	95% Percentile Bootstrap UCL	22.7
90% Chebyshev(Mean, Sd) UCL	28.34	95% Chebyshev(Mean, Sd) UCL	33.79
97.5% Chebyshev(Mean, Sd) UCL	41.37	99% Chebyshev(Mean, Sd) UCL	56.25
Suggested UCL to Use			
95% Student's-t UCL	24.85		
Recommended UCL exceeds the maximum observation			
User Identified Distribution:	N/A	User Selected UCL:	Maximum 23.7
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

Calcium (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	2
Minimum	102	Mean	415.5
Maximum	820	Median	480
SD	219.8	Std. Error of Mean	56.74
Coefficient of Variation	0.529	Skewness	-0.201
Normal GOF Test			
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.168	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	515.5	95% Adjusted-CLT UCL (Chen-1995)	505.7
		95% Modified-t UCL (Johnson-1978)	515
Gamma GOF Test			
A-D Test Statistic	1.114	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.745	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.239	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.224	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.679	k star (bias corrected MLE)	2.188
Theta hat (MLE)	155.1	Theta star (bias corrected MLE)	189.9
nu hat (MLE)	80.38	nu star (bias corrected)	65.64
MLE Mean (bias corrected)	415.5	MLE Sd (bias corrected)	280.9
		Approximate Chi Square Value (0.05)	47.99
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	46.14
Assuming Gamma Distribution			
95% Approximate Gamma UCL	568.3	95% Adjusted Gamma UCL	591.1
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.809	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.267	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data Not Lognormal at 10% Significance Level	
Data Not Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.625	Mean of logged Data	5.831
Maximum of Logged Data	6.709	SD of logged Data	0.728

Assuming Lognormal Distribution			
95% H-UCL	701.3	90% Chebyshev (MVUE) UCL	694.5
95% Chebyshev (MVUE) UCL	812.1	97.5% Chebyshev (MVUE) UCL	975.3
99% Chebyshev (MVUE) UCL	1296		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	508.9	95% BCA Bootstrap UCL	503.3
95% Standard Bootstrap UCL	506.8	95% Bootstrap-t UCL	511.7
95% Hall's Bootstrap UCL	504.2	95% Percentile Bootstrap UCL	506.3
90% Chebyshev(Mean, Sd) UCL	585.8	95% Chebyshev(Mean, Sd) UCL	662.9
97.5% Chebyshev(Mean, Sd) UCL	769.9	99% Chebyshev(Mean, Sd) UCL	980.1
Suggested UCL to Use			
95% Student's-t UCL	515.5		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 515.5
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

Chloride (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	14
		Number of Missing Observations	2
Minimum	711	Mean	10217
Maximum	37000	Median	5500
SD	9720	Std. Error of Mean	2510
Coefficient of Variation	0.951	Skewness	1.587
Normal GOF Test			
Shapiro Wilk Test Statistic	0.809	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Approximate Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 14637		95% Adjusted-CLT UCL (Chen-1995) 15444	
		95% Modified-t UCL (Johnson-1978) 14808	
Gamma GOF Test			
A-D Test Statistic	0.431	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.758	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.157	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.227	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.254	k star (bias corrected MLE)	1.047
Theta hat (MLE)	8150	Theta star (bias corrected MLE)	9755
nu hat (MLE)	37.61	nu star (bias corrected)	31.42
MLE Mean (bias corrected)	10217	MLE Sd (bias corrected)	9983
		Approximate Chi Square Value (0.05)	19.61
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	18.47
Assuming Gamma Distribution			
95% Approximate Gamma UCL	16368	95% Adjusted Gamma UCL	17381
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.957	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.567	Mean of logged Data	8.783
Maximum of Logged Data	10.52	SD of logged Data	1.051

Assuming Lognormal Distribution			
95% H-UCL	25058	90% Chebyshev (MVUE) UCL	20370
95% Chebyshev (MVUE) UCL	24727	97.5% Chebyshev (MVUE) UCL	30775
99% Chebyshev (MVUE) UCL	42654		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	14345	95% BCA Bootstrap UCL	15400
95% Standard Bootstrap UCL	14336	95% Bootstrap-t UCL	17264
95% Hall's Bootstrap UCL	17504	95% Percentile Bootstrap UCL	14383
90% Chebyshev(Mean, Sd) UCL	17746	95% Chebyshev(Mean, Sd) UCL	21156
97.5% Chebyshev(Mean, Sd) UCL	25890	99% Chebyshev(Mean, Sd) UCL	35188
Suggested UCL to Use			
95% Student's-t UCL 14637			
User Identified Distribution:	G	User Selected UCL:	95% Adjusted Gamma UCL 17381
When a data set follows an approximate distribution passing only one of the GOF tests, it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Magnesium (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	13
		Number of Missing Observations	2
Minimum	808	Mean	14955
Maximum	33500	Median	11600
SD	10296	Std. Error of Mean	2659
Coefficient of Variation	0.689	Skewness	0.711
Normal GOF Test			
Shapiro Wilk Test Statistic	0.907	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.193	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	19637	95% Adjusted-CLT UCL (Chen-1995)	19849
		95% Modified-t UCL (Johnson-1978)	19718
Gamma GOF Test			
A-D Test Statistic	0.278	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.115	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.225	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.764	k star (bias corrected MLE)	1.456
Theta hat (MLE)	8476	Theta star (bias corrected MLE)	10272
nu hat (MLE)	52.93	nu star (bias corrected)	43.68
MLE Mean (bias corrected)	14955	MLE Sd (bias corrected)	12394
		Approximate Chi Square Value (0.05)	29.52
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	28.09
Assuming Gamma Distribution			
95% Approximate Gamma UCL	22125	95% Adjusted Gamma UCL	23250
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.168	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Approximate Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.695	Mean of logged Data	9.303
Maximum of Logged Data	10.42	SD of logged Data	0.959

Assuming Lognormal Distribution			
95% H-UCL	34576	90% Chebyshev (MVUE) UCL	30166
95% Chebyshev (MVUE) UCL	36274	97.5% Chebyshev (MVUE) UCL	44751
99% Chebyshev (MVUE) UCL	61403		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	19327	95% BCA Bootstrap UCL	19594
95% Standard Bootstrap UCL	19236	95% Bootstrap-t UCL	20687
95% Hall's Bootstrap UCL	19705	95% Percentile Bootstrap UCL	19240
90% Chebyshev(Mean, Sd) UCL	22930	95% Chebyshev(Mean, Sd) UCL	26543
97.5% Chebyshev(Mean, Sd) UCL	31557	99% Chebyshev(Mean, Sd) UCL	41407
Suggested UCL to Use			
95% Student's-t UCL 19637			
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 19637
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Nickel (mg/L)

General Statistics			
Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	12
Minimum	0.0231	Mean	0.051
Maximum	0.0726	Median	0.0653
SD	0.0248	Std. Error of Mean	0.0111
Coefficient of Variation	0.488	Skewness	-0.562

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7). The Chebyshev UCL often results in gross overestimates of the mean. Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test			
Shapiro Wilk Test Statistic	0.77	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.686	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.318	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.396	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0746	95% Adjusted-CLT UCL (Chen-1995)	0.0663
		95% Modified-t UCL (Johnson-1978)	0.0742
Gamma GOF Test			
A-D Test Statistic	0.75	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.681	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.356	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.358	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Gamma Statistics			
k hat (MLE)	4.264	k star (bias corrected MLE)	1.839
Theta hat (MLE)	0.012	Theta star (bias corrected MLE)	0.0277
nu hat (MLE)	42.64	nu star (bias corrected)	18.39
MLE Mean (bias corrected)	0.051	MLE Sd (bias corrected)	0.0376
		Approximate Chi Square Value (0.05)	9.674
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	7.079

Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0969	95% Adjusted Gamma UCL	0.132
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.751	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.806	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.337	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.319	Data Not Lognormal at 10% Significance Level	
Data Not Lognormal at 10% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	-3.768	Mean of logged Data	-3.099
Maximum of Logged Data	-2.623	SD of logged Data	0.582
Assuming Lognormal Distribution			
95% H-UCL	0.137	90% Chebyshev (MVUE) UCL	0.0912
95% Chebyshev (MVUE) UCL	0.109	97.5% Chebyshev (MVUE) UCL	0.134
99% Chebyshev (MVUE) UCL	0.183		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.0692	95% BCA Bootstrap UCL	0.0675
95% Standard Bootstrap UCL	0.0675	95% Bootstrap-t UCL	0.0731
95% Hall's Bootstrap UCL	0.0591	95% Percentile Bootstrap UCL	0.0683
90% Chebyshev(Mean, Sd) UCL	0.0843	95% Chebyshev(Mean, Sd) UCL	0.0994
97.5% Chebyshev(Mean, Sd) UCL	0.12	99% Chebyshev(Mean, Sd) UCL	0.162
Suggested UCL to Use			
95% Student's-t UCL	0.0746		
Recommended UCL exceeds the maximum observation			
User Identified Distribution:	N/A	User Selected UCL:	Maximum 0.0726
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

Potassium (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	2
Minimum	143	Mean	1904
Maximum	7300	Median	1200
SD	1842	Std. Error of Mean	475.5
Coefficient of Variation	0.967	Skewness	1.948
Normal GOF Test			
Shapiro Wilk Test Statistic	0.804	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Approximate Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2742	95% Adjusted-CLT UCL (Chen-1995)	2942
		95% Modified-t UCL (Johnson-1978)	2782
Gamma GOF Test			
A-D Test Statistic	0.204	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.106	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.226	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.3	k star (bias corrected MLE)	1.084
Theta hat (MLE)	1465	Theta star (bias corrected MLE)	1757
nu hat (MLE)	38.99	nu star (bias corrected)	32.52
MLE Mean (bias corrected)	1904	MLE Sd (bias corrected)	1829
		Approximate Chi Square Value (0.05)	20.49
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	19.32
Assuming Gamma Distribution			
95% Approximate Gamma UCL	3023	95% Adjusted Gamma UCL	3206
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	4.963	Mean of logged Data	7.12
Maximum of Logged Data	8.896	SD of logged Data	1.032
Assuming Lognormal Distribution			
95% H-UCL	4558	90% Chebyshev (MVUE) UCL	3762
95% Chebyshev (MVUE) UCL	4559	97.5% Chebyshev (MVUE) UCL	5664
99% Chebyshev (MVUE) UCL	7835		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2686	95% BCA Bootstrap UCL	2940
95% Standard Bootstrap UCL	2682	95% Bootstrap-t UCL	3342
95% Hall's Bootstrap UCL	6210	95% Percentile Bootstrap UCL	2740
90% Chebyshev(Mean, Sd) UCL	3331	95% Chebyshev(Mean, Sd) UCL	3977
97.5% Chebyshev(Mean, Sd) UCL	4874	99% Chebyshev(Mean, Sd) UCL	6635
Suggested UCL to Use			
95% Student's-t UCL	2742		
User Identified Distribution:	G	User Selected UCL:	95% Adjusted Gamma UCL
		3206	
When a data set follows an approximate distribution passing only one of the GOF tests, it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness using results from simulation studies. However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Selenium (mg/L)

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	12
		Number of Missing Observations	4
Minimum	0.704	Mean	7.045
Maximum	22	Median	5.545
SD	6.028	Std. Error of Mean	1.74
Coefficient of Variation	0.856	Skewness	1.675
Normal GOF Test			
Shapiro Wilk Test Statistic	0.811	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.805	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.332	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.281	Data Not Normal at 1% Significance Level	
Data appear Approximate Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	10.17	95% Adjusted-CLT UCL (Chen-1995)	10.81
		95% Modified-t UCL (Johnson-1978)	10.31
Gamma GOF Test			
A-D Test Statistic	0.42	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.744	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.241	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.249	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.652	k star (bias corrected MLE)	1.295
Theta hat (MLE)	4.264	Theta star (bias corrected MLE)	5.441
nu hat (MLE)	39.65	nu star (bias corrected)	31.07
MLE Mean (bias corrected)	7.045	MLE Sd (bias corrected)	6.191
		Approximate Chi Square Value (0.05)	19.34
Adjusted Level of Significance	0.029	Adjusted Chi Square Value	17.94
Assuming Gamma Distribution			
95% Approximate Gamma UCL	11.32	95% Adjusted Gamma UCL	12.2
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.883	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.218	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.223	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	-0.351	Mean of logged Data	1.62
Maximum of Logged Data	3.091	SD of logged Data	0.911
Assuming Lognormal Distribution			
95% H-UCL	16.32	90% Chebyshev (MVUE) UCL	13.44
95% Chebyshev (MVUE) UCL	16.22	97.5% Chebyshev (MVUE) UCL	20.07
99% Chebyshev (MVUE) UCL	27.64		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	9.907	95% BCA Bootstrap UCL	10.77
95% Standard Bootstrap UCL	9.772	95% Bootstrap-t UCL	13.21
95% Hall's Bootstrap UCL	26.18	95% Percentile Bootstrap UCL	9.921
90% Chebyshev(Mean, Sd) UCL	12.26	95% Chebyshev(Mean, Sd) UCL	14.63
97.5% Chebyshev(Mean, Sd) UCL	17.91	99% Chebyshev(Mean, Sd) UCL	24.36
Suggested UCL to Use			
95% Student's-t UCL	10.17		
When a data set follows an approximate distribution passing only one of the GOF tests, it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL			
User Identified Distribution:	G	User Selected UCL:	95% Adjusted Gamma UCL 12.2
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Sodium (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	2
Minimum	1950	Mean	35103
Maximum	80300	Median	22000
SD	27358	Std. Error of Mean	7064
Coefficient of Variation	0.779	Skewness	0.819
Normal GOF Test			
Shapiro Wilk Test Statistic	0.835	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.244	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 47545		95% Adjusted-CLT UCL (Chen-1995)	48317
		95% Modified-t UCL (Johnson-1978)	47794
Gamma GOF Test			
A-D Test Statistic	0.481	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.225	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.571	k star (bias corrected MLE)	1.301
Theta hat (MLE)	22343	Theta star (bias corrected MLE)	26975
nu hat (MLE)	47.13	nu star (bias corrected)	39.04
MLE Mean (bias corrected)	35103	MLE Sd (bias corrected)	30772
		Approximate Chi Square Value (0.05)	25.73
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	24.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL	53266	95% Adjusted Gamma UCL	56160
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Approximate Lognormal at 10% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	7.576	Mean of logged Data	10.12
Maximum of Logged Data	11.29	SD of logged Data	0.98
Assuming Lognormal Distribution			
95% H-UCL	81217	90% Chebyshev (MVUE) UCL	69841
95% Chebyshev (MVUE) UCL	84162	97.5% Chebyshev (MVUE) UCL	104039
99% Chebyshev (MVUE) UCL	143084		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	46722	95% BCA Bootstrap UCL	48173
95% Standard Bootstrap UCL	46512	95% Bootstrap-t UCL	51281
95% Hall's Bootstrap UCL	46080	95% Percentile Bootstrap UCL	46470
90% Chebyshev(Mean, Sd) UCL	56295	95% Chebyshev(Mean, Sd) UCL	65894
97.5% Chebyshev(Mean, Sd) UCL	79217	99% Chebyshev(Mean, Sd) UCL	105387
Suggested UCL to Use			
95% Student's-t UCL	47545		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 47545
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Strontium (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	2
Minimum	1.79	Mean	14.71
Maximum	20.2	Median	16.1
SD	4.85	Std. Error of Mean	1.252
Coefficient of Variation	0.33	Skewness	-1.371
Normal GOF Test			
Shapiro Wilk Test Statistic	0.893	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.146	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	16.92	95% Adjusted-CLT UCL (Chen-1995)	16.3
		95% Modified-t UCL (Johnson-1978)	16.84
Gamma GOF Test			
A-D Test Statistic	1.314	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.739	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.19	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.222	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Aprpr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.87	k star (bias corrected MLE)	3.94
Theta hat (MLE)	3.021	Theta star (bias corrected MLE)	3.734
nu hat (MLE)	146.1	nu star (bias corrected)	118.2
MLE Mean (bias corrected)	14.71	MLE Sd (bias corrected)	7.412
		Approximate Chi Square Value (0.05)	94.1
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	91.46
Assuming Gamma Distribution			
95% Approximate Gamma UCL	18.48	95% Adjusted Gamma UCL	19.02
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.632	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.245	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data Not Lognormal at 10% Significance Level	
Data Not Lognormal at 10% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	0.582	Mean of logged Data	2.583
Maximum of Logged Data	3.006	SD of logged Data	0.597
Assuming Lognormal Distribution			
95% H-UCL	22.39	90% Chebyshev (MVUE) UCL	23.12
95% Chebyshev (MVUE) UCL	26.53	97.5% Chebyshev (MVUE) UCL	31.25
99% Chebyshev (MVUE) UCL	40.54		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	16.77	95% BCA Bootstrap UCL	16.33
95% Standard Bootstrap UCL	16.74	95% Bootstrap-t UCL	16.52
95% Hall's Bootstrap UCL	16.39	95% Percentile Bootstrap UCL	16.57
90% Chebyshev(Mean, Sd) UCL	18.47	95% Chebyshev(Mean, Sd) UCL	20.17
97.5% Chebyshev(Mean, Sd) UCL	22.53	99% Chebyshev(Mean, Sd) UCL	27.17
Suggested UCL to Use			
95% Student's-t UCL	16.92		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 16.92
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
Thallium (mg/L)			
General Statistics			
Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	12
Minimum	0.0138	Mean	0.0279
Maximum	0.0382	Median	0.0358
SD	0.0124	Std. Error of Mean	0.00554
Coefficient of Variation	0.444	Skewness	-0.592
Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7). The Chebyshev UCL often results in gross overestimates of the mean. Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.			
Normal GOF Test			
Shapiro Wilk Test Statistic	0.752	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.686	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.337	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.396	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Note GOF tests may be unreliable for small sample sizes			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0398	95% Adjusted-CLT UCL (Chen-1995)	0.0355
		95% Modified-t UCL (Johnson-1978)	0.0395
Gamma GOF Test			
A-D Test Statistic	0.782	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.681	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.369	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.358	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	5.278	k star (bias corrected MLE)	2.244
Theta hat (MLE)	0.00529	Theta star (bias corrected MLE)	0.0124
nu hat (MLE)	52.78	nu star (bias corrected)	22.44
MLE Mean (bias corrected)	0.0279	MLE Sd (bias corrected)	0.0186
		Approximate Chi Square Value (0.05)	12.67
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	9.622
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.0495	95% Adjusted Gamma UCL	0.0652

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.744	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.806	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.348	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.319	Data Not Lognormal at 10% Significance Level	
Data Not Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.283	Mean of logged Data	-3.675
Maximum of Logged Data	-3.265	SD of logged Data	0.518
Assuming Lognormal Distribution			
95% H-UCL	0.0631	90% Chebyshev (MVUE) UCL	0.0475
95% Chebyshev (MVUE) UCL	0.0563	97.5% Chebyshev (MVUE) UCL	0.0685
99% Chebyshev (MVUE) UCL	0.0924		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.0371	95% BCA Bootstrap UCL	0.0365
95% Standard Bootstrap UCL	0.0362	95% Bootstrap-t UCL	0.0391
95% Hall's Bootstrap UCL	0.032	95% Percentile Bootstrap UCL	0.0367
90% Chebyshev(Mean, Sd) UCL	0.0446	95% Chebyshev(Mean, Sd) UCL	0.0521
97.5% Chebyshev(Mean, Sd) UCL	0.0626	99% Chebyshev(Mean, Sd) UCL	0.0831
Suggested UCL to Use			
95% Student's-t UCL	0.0398	Recommended UCL exceeds the maximum observation	
User Identified Distribution:	N/A	User Selected UCL:	Maximum 0.0382
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			

Uranium (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	2
Minimum	0.874	Mean	11.9
Maximum	31	Median	8
SD	8.742	Std. Error of Mean	2.257
Coefficient of Variation	0.735	Skewness	0.709
Normal GOF Test			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.22	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	15.88	95% Adjusted-CLT UCL (Chen-1995)	16.06
		95% Modified-t UCL (Johnson-1978)	15.95
Gamma GOF Test			
A-D Test Statistic	0.337	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.225	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.621	k star (bias corrected MLE)	1.341
Theta hat (MLE)	7.343	Theta star (bias corrected MLE)	8.875
nu hat (MLE)	48.62	nu star (bias corrected)	40.23
MLE Mean (bias corrected)	11.9	MLE Sd (bias corrected)	10.28
		Approximate Chi Square Value (0.05)	26.7
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	25.34
Assuming Gamma Distribution			
95% Approximate Gamma UCL	17.93	95% Adjusted Gamma UCL	18.89

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.928	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.164	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.135	Mean of logged Data	2.137
Maximum of Logged Data	3.434	SD of logged Data	0.966
Assuming Lognormal Distribution			
95% H-UCL	27.05	90% Chebyshev (MVUE) UCL	23.5
95% Chebyshev (MVUE) UCL	28.28	97.5% Chebyshev (MVUE) UCL	34.91
99% Chebyshev (MVUE) UCL	47.93		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	15.61	95% BCA Bootstrap UCL	15.93
95% Standard Bootstrap UCL	15.57	95% Bootstrap-t UCL	16.94
95% Hall's Bootstrap UCL	16.49	95% Percentile Bootstrap UCL	15.55
90% Chebyshev(Mean, Sd) UCL	18.67	95% Chebyshev(Mean, Sd) UCL	21.74
97.5% Chebyshev(Mean, Sd) UCL	26	99% Chebyshev(Mean, Sd) UCL	34.36
Suggested UCL to Use			
95% Student's-t UCL	15.88		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 15.88
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Zinc (mg/L)

General Statistics			
Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	12
Minimum	0.0298	Mean	0.119
Maximum	0.246	Median	0.115
SD	0.0854	Std. Error of Mean	0.0382
Coefficient of Variation	0.716	Skewness	0.731
<p>Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).</p> <p>The Chebyshev UCL often results in gross overestimates of the mean.</p> <p>Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.</p>			
Normal GOF Test			
Shapiro Wilk Test Statistic	0.952	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.686	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.396	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Note GOF tests may be unreliable for small sample sizes			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.201	95% Adjusted-CLT UCL (Chen-1995)	0.195
		95% Modified-t UCL (Johnson-1978)	0.203
Gamma GOF Test			
A-D Test Statistic	0.198	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.684	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.179	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.36	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Gamma Statistics			
k hat (MLE)	2.17	k star (bias corrected MLE)	1.001
Theta hat (MLE)	0.0549	Theta star (bias corrected MLE)	0.119
nu hat (MLE)	21.7	nu star (bias corrected)	10.01
MLE Mean (bias corrected)	0.119	MLE Sd (bias corrected)	0.119
		Approximate Chi Square Value (0.05)	3.951
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	2.474
Assuming Gamma Distribution			
95% Approximate Gamma UCL	0.302	95% Adjusted Gamma UCL	0.482
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.806	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.2	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.319	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Note GOF tests may be unreliable for small sample sizes			
Lognormal Statistics			
Minimum of Logged Data	-3.513	Mean of logged Data	-2.375
Maximum of Logged Data	-1.402	SD of logged Data	0.835
Assuming Lognormal Distribution			
95% H-UCL	0.763	90% Chebyshev (MVUE) UCL	0.254
95% Chebyshev (MVUE) UCL	0.314	97.5% Chebyshev (MVUE) UCL	0.397
99% Chebyshev (MVUE) UCL	0.56		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.182	95% BCA Bootstrap UCL	0.181
95% Standard Bootstrap UCL	0.175	95% Bootstrap-t UCL	0.22
95% Hall's Bootstrap UCL	0.229	95% Percentile Bootstrap UCL	0.177
90% Chebyshev(Mean, Sd) UCL	0.234	95% Chebyshev(Mean, Sd) UCL	0.286
97.5% Chebyshev(Mean, Sd) UCL	0.358	99% Chebyshev(Mean, Sd) UCL	0.499
Suggested UCL to Use			
95% Student's-t UCL	0.201		
User Identified Distribution:	N/A	User Selected UCL:	Maximum 0.246
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Ammonia Total as N (mg/L)

General Statistics			
Total Number of Observations	13	Number of Distinct Observations	12
		Number of Missing Observations	4
Minimum	8.3	Mean	22.5
Maximum	55.5	Median	18
SD	13.02	Std. Error of Mean	3.612
Coefficient of Variation	0.579	Skewness	1.481
Normal GOF Test			
Shapiro Wilk Test Statistic	0.868	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.814	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.271	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	28.94	95% Adjusted-CLT UCL (Chen-1995)	30.03
		95% Modified-t UCL (Johnson-1978)	29.18
Gamma GOF Test			
A-D Test Statistic	0.279	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.737	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.146	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.238	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	3.865	k star (bias corrected MLE)	3.025
Theta hat (MLE)	5.821	Theta star (bias corrected MLE)	7.439
nu hat (MLE)	100.5	nu star (bias corrected)	78.64
MLE Mean (bias corrected)	22.5	MLE Sd (bias corrected)	12.94
		Approximate Chi Square Value (0.05)	59.21
Adjusted Level of Significance	0.0301	Adjusted Chi Square Value	56.81
Assuming Gamma Distribution			
95% Approximate Gamma UCL	29.88	95% Adjusted Gamma UCL	31.14
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.98	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.889	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.121	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.215	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.116	Mean of logged Data	2.979
Maximum of Logged Data	4.016	SD of logged Data	0.531
Assuming Lognormal Distribution			
95% H-UCL	31.47	90% Chebyshev (MVUE) UCL	32.53
95% Chebyshev (MVUE) UCL	37.14	97.5% Chebyshev (MVUE) UCL	43.53
99% Chebyshev (MVUE) UCL	56.09		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			
Nonparametric Distribution Free UCLs			
95% CLT UCL	28.44	95% BCA Bootstrap UCL	30.25
95% Standard Bootstrap UCL	28.15	95% Bootstrap-t UCL	31.57
95% Hall's Bootstrap UCL	32.4	95% Percentile Bootstrap UCL	28.44
90% Chebyshev(Mean, Sd) UCL	33.33	95% Chebyshev(Mean, Sd) UCL	38.24
97.5% Chebyshev(Mean, Sd) UCL	45.05	99% Chebyshev(Mean, Sd) UCL	58.44
Suggested UCL to Use			
95% Student's-t UCL	28.94		
User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL 28.94
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Ammonia Un-ionized as NH3 (mg/L)

General Statistics			
Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	15
Minimum	8.15	Mean	9.075
Maximum	10	Median	9.075
User Identified Distribution:	N/A	User Selected UCL:	Maximum 10
Warning: This data set only has 2 observations!			
Data set is too small to compute reliable and meaningful statistics and estimates!			
The data set for variable Ammonia Un-ionized as NH3 (mg/L) was not processed!			
It is suggested to collect at least 8 to 10 observations before using these statistical methods!			
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.			

Fluoride (mg/L)

General Statistics			
Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	12
Minimum	6.85	Mean	12.31
Maximum	24.2	Median	11.3
SD	7.03	Std. Error of Mean	3.144
Coefficient of Variation	0.571	Skewness	1.67
Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).			
The Chebyshev UCL often results in gross overestimates of the mean.			
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.			

Normal GOF Test		
Shapiro Wilk Test Statistic	0.809	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.686	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.323	Lilliefors GOF Test
1% Lilliefors Critical Value	0.396	Data appear Normal at 1% Significance Level
Data appear Normal at 1% Significance Level		
Note GOF tests may be unreliable for small sample sizes		

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	19.01	95% Adjusted-CLT UCL (Chen-1995)	19.99
		95% Modified-t UCL (Johnson-1978)	19.4
Gamma GOF Test			
A-D Test Statistic	0.428	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.681	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.267	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.358	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Gamma Statistics			
k hat (MLE)	4.678	k star (bias corrected MLE)	2.005
Theta hat (MLE)	2.631	Theta star (bias corrected MLE)	6.139
nu hat (MLE)	46.78	nu star (bias corrected)	20.05
MLE Mean (bias corrected)	12.31	MLE Sd (bias corrected)	8.692
		Approximate Chi Square Value (0.05)	10.88
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	8.099
Assuming Gamma Distribution			
95% Approximate Gamma UCL	22.66	95% Adjusted Gamma UCL	30.46

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.806	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.239	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.319	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Lognormal Statistics			
Minimum of Logged Data	1.924	Mean of logged Data	2.399
Maximum of Logged Data	3.186	SD of logged Data	0.506
Assuming Lognormal Distribution			
95% H-UCL	26.5	90% Chebyshev (MVUE) UCL	20.37
95% Chebyshev (MVUE) UCL	24.08	97.5% Chebyshev (MVUE) UCL	29.23
99% Chebyshev (MVUE) UCL	39.35		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs			
95% CLT UCL	17.48	95% BCA Bootstrap UCL	19.04
95% Standard Bootstrap UCL	17.06	95% Bootstrap-t UCL	26.15
95% Hall's Bootstrap UCL	39.23	95% Percentile Bootstrap UCL	18.15
90% Chebyshev(Mean, Sd) UCL	21.74	95% Chebyshev(Mean, Sd) UCL	26.01
97.5% Chebyshev(Mean, Sd) UCL	31.94	99% Chebyshev(Mean, Sd) UCL	43.59

Suggested UCL to Use

	95% Student's-t UCL	19.01			
User Identified Distribution:	N/A	User Selected UCL:	Maximum		24.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Nitrate + Nitrite as Nitrogen (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	14
		Number of Missing Observations	2
Minimum	493	Mean	5968
Maximum	19000	Median	4000
SD	4960	Std. Error of Mean	1281
Coefficient of Variation	0.831	Skewness	1.38
Normal GOF Test			
Shapiro Wilk Test Statistic	0.88	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level	
Data appear Normal at 1% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	8224	95% Adjusted-CLT UCL (Chen-1995)	8563
		95% Modified-t UCL (Johnson-1978)	8300
Gamma GOF Test			
A-D Test Statistic	0.146	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.107	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.225	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.531	k star (bias corrected MLE)	1.269
Theta hat (MLE)	3898	Theta star (bias corrected MLE)	4702
nu hat (MLE)	45.93	nu star (bias corrected)	38.08
MLE Mean (bias corrected)	5968	MLE Sd (bias corrected)	5298
		Approximate Chi Square Value (0.05)	24.95
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	23.64
Assuming Gamma Distribution			
95% Approximate Gamma UCL	9110	95% Adjusted Gamma UCL	9612
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.135	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.201	Mean of logged Data	8.333
Maximum of Logged Data	9.852	SD of logged Data	0.959
Assuming Lognormal Distribution			
95% H-UCL	13096	90% Chebyshev (MVUE) UCL	11429
95% Chebyshev (MVUE) UCL	13743	97.5% Chebyshev (MVUE) UCL	16953
99% Chebyshev (MVUE) UCL	23261		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	8075	95% BCA Bootstrap UCL	8598
95% Standard Bootstrap UCL	8068	95% Bootstrap-t UCL	9287
95% Hall's Bootstrap UCL	9465	95% Percentile Bootstrap UCL	8175
90% Chebyshev(Mean, Sd) UCL	9811	95% Chebyshev(Mean, Sd) UCL	11551
97.5% Chebyshev(Mean, Sd) UCL	13967	99% Chebyshev(Mean, Sd) UCL	18712

Suggested UCL to Use

95% Student's-t UCL 8224

User Identified Distribution: N User Selected UCL: 95% Student's-t UCL 8224

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

pH

General Statistics

Total Number of Observations	15	Number of Distinct Observations	14
		Number of Missing Observations	2
Minimum	7.21	Mean	7.98
Maximum	8.52	Median	8.08
SD	0.46	Std. Error of Mean	0.119
Coefficient of Variation	0.0577	Skewness	-0.688

Normal GOF Test

Shapiro Wilk Test Statistic	0.877	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.178	Lilliefors GOF Test
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	8.189	95% Adjusted-CLT UCL (Chen-1995)	8.153
		95% Modified-t UCL (Johnson-1978)	8.186

Gamma GOF Test

A-D Test Statistic	0.789	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.734	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.186	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.221	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics

k hat (MLE)	314.3	k star (bias corrected MLE)	251.5
Theta hat (MLE)	0.0254	Theta star (bias corrected MLE)	0.0317
nu hat (MLE)	9430	nu star (bias corrected)	7545
MLE Mean (bias corrected)	7.98	MLE Sd (bias corrected)	0.503
		Approximate Chi Square Value (0.05)	7344
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	7320

Assuming Gamma Distribution

95% Approximate Gamma UCL	8.198	95% Adjusted Gamma UCL	8.226
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.869	Shapiro Wilk Lognormal GOF Test
10% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.186	Lilliefors Lognormal GOF Test
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level

Data appear Approximate Lognormal at 10% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.975	Mean of logged Data	2.075
Maximum of Logged Data	2.142	SD of logged Data	0.0588

Assuming Lognormal Distribution

95% H-UCL	N/A	90% Chebyshev (MVUE) UCL	8.344
95% Chebyshev (MVUE) UCL	8.508	97.5% Chebyshev (MVUE) UCL	8.737
99% Chebyshev (MVUE) UCL	9.186		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	8.175	95% BCA Bootstrap UCL	8.145
95% Standard Bootstrap UCL	8.17	95% Bootstrap-t UCL	8.167
95% Hall's Bootstrap UCL	8.146	95% Percentile Bootstrap UCL	8.162
90% Chebyshev(Mean, Sd) UCL	8.336	95% Chebyshev(Mean, Sd) UCL	8.498
97.5% Chebyshev(Mean, Sd) UCL	8.722	99% Chebyshev(Mean, Sd) UCL	9.162

Suggested UCL to Use

95% Student's-t UCL 8.189

User Identified Distribution:	N	User Selected UCL:	N/A	N/A
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

Sulfate (mg/L)

General Statistics

Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	2
Minimum	5340	Mean	117363
Maximum	284000	Median	77300
SD	91842	Std. Error of Mean	23713
Coefficient of Variation	0.783	Skewness	1.002

Normal GOF Test

Shapiro Wilk Test Statistic	0.841	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.835	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.242	Lilliefors GOF Test
1% Lilliefors Critical Value	0.255	Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL	95% UCLs (Adjusted for Skewness)
95% Student's-t UCL 159129	95% Adjusted-CLT UCL (Chen-1995) 162926
	95% Modified-t UCL (Johnson-1978) 160152

Gamma GOF Test

A-D Test Statistic	0.408	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.148	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.225	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.563	k star (bias corrected MLE)	1.295
Theta hat (MLE)	75082	Theta star (bias corrected MLE)	90632
nu hat (MLE)	46.89	nu star (bias corrected)	38.85
MLE Mean (bias corrected)	117363	MLE Sd (bias corrected)	103135
		Approximate Chi Square Value (0.05)	25.57
Adjusted Level of Significance	0.0324	Adjusted Chi Square Value	24.25

Assuming Gamma Distribution

95% Approximate Gamma UCL 178293	95% Adjusted Gamma UCL 188008
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.883	Shapiro Wilk Lognormal GOF Test
10% Shapiro Wilk Critical Value	0.901	Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.169	Lilliefors Lognormal GOF Test
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level

Data appear Approximate Lognormal at 10% Significance Level

Lognormal Statistics

Minimum of Logged Data	8.583	Mean of logged Data	11.32
Maximum of Logged Data	12.56	SD of logged Data	1.005

Assuming Lognormal Distribution

95% H-UCL 285942	90% Chebyshev (MVUE) UCL 241299
95% Chebyshev (MVUE) UCL 291540	97.5% Chebyshev (MVUE) UCL 361273
99% Chebyshev (MVUE) UCL 498249	

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution

Nonparametric Distribution Free UCLs

95% CLT UCL	156368	95% BCA Bootstrap UCL	161276
95% Standard Bootstrap UCL	155363	95% Bootstrap-t UCL	170601
95% Hall's Bootstrap UCL	156555	95% Percentile Bootstrap UCL	155833
90% Chebyshev(Mean, Sd) UCL	188503	95% Chebyshev(Mean, Sd) UCL	220727
97.5% Chebyshev(Mean, Sd) UCL	265453	99% Chebyshev(Mean, Sd) UCL	353309

Suggested UCL to Use

95% Student's-t UCL 159129

User Identified Distribution:	N	User Selected UCL:	95% Student's-t UCL	159129
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Total Residual Chlorine (mg/L)

General Statistics

Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	0
Minimum	0.04	Mean	0.05
Maximum	0.06	Median	0.05

User Identified Distribution:	N/A	User Selected UCL:	Maximum	0.06
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Warning: This data set only has 2 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Total Residual Chlorine (mg/L) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Silica (mg/L)

General Statistics

Total Number of Observations	5	Number of Distinct Observations	5
		Number of Missing Observations	12
Minimum	56.7	Mean	77
Maximum	93.7	Median	86.3
SD	18.09	Std. Error of Mean	8.09
Coefficient of Variation	0.235	Skewness	-0.518

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach,

refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance,

but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).

The Chebyshev UCL often results in gross overestimates of the mean.

Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test		
Shapiro Wilk Test Statistic	0.799	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.686	Data appear Normal at 1% Significance Level
Lilliefors Test Statistic	0.296	Lilliefors GOF Test
1% Lilliefors Critical Value	0.396	Data appear Normal at 1% Significance Level
Data appear Normal at 1% Significance Level		
Note GOF tests may be unreliable for small sample sizes		

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	94.25	95% Adjusted-CLT UCL (Chen-1995)	88.31
		95% Modified-t UCL (Johnson-1978)	93.93
Gamma GOF Test			
A-D Test Statistic	0.661	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.679	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.328	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.357	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Gamma Statistics			
k hat (MLE)	21.15	k star (bias corrected MLE)	8.594
Theta hat (MLE)	3.641	Theta star (bias corrected MLE)	8.96
nu hat (MLE)	211.5	nu star (bias corrected)	85.94
MLE Mean (bias corrected)	77	MLE Sd (bias corrected)	26.27
		Approximate Chi Square Value (0.05)	65.57
Adjusted Level of Significance	0.0086	Adjusted Chi Square Value	57.84

Assuming Gamma Distribution			
95% Approximate Gamma UCL	100.9	95% Adjusted Gamma UCL	114.4

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.785	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.806	Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.311	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.319	Data appear Lognormal at 10% Significance Level	
Data appear Approximate Lognormal at 10% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Lognormal Statistics			
Minimum of Logged Data	4.038	Mean of logged Data	4.32
Maximum of Logged Data	4.54	SD of logged Data	0.248

Assuming Lognormal Distribution			
95% H-UCL	103.1	90% Chebyshev (MVUE) UCL	102.7
95% Chebyshev (MVUE) UCL	114.3	97.5% Chebyshev (MVUE) UCL	130.4
99% Chebyshev (MVUE) UCL	162		

Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution			

Nonparametric Distribution Free UCLs			
95% CLT UCL	90.31	95% BCA Bootstrap UCL	88.56
95% Standard Bootstrap UCL	89.03	95% Bootstrap-t UCL	93.06
95% Hall's Bootstrap UCL	83.08	95% Percentile Bootstrap UCL	89.42
90% Chebyshev(Mean, Sd) UCL	101.3	95% Chebyshev(Mean, Sd) UCL	112.3
97.5% Chebyshev(Mean, Sd) UCL	127.5	99% Chebyshev(Mean, Sd) UCL	157.5

Suggested UCL to Use

95% Student's-t UCL 94.25

Recommended UCL exceeds the maximum observation

User Identified Distribution:	N	User Selected UCL:	Maximum	93.7
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

Table D-10-8. UCL Statistics for Surface Water Data Sets with Non-Detects, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

User Selected Options	
Date/Time of Computation	ProUCL 5.2 3/18/2023 6:44:49 PM
From File	Pond SW Stats Working File_d.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Thorium-232 (pCi/L)

General Statistics			
Total Number of Observations	2	Number of Distinct Observations	2
		Number of Missing Observations	14
Number of Detects	1	Number of Non-Detects	1
Number of Distinct Detects	1	Number of Distinct Non-Detects	1
User Identified Distribution:	N/A	User Selected UCL: Detection	2.03

Warning: This data set only has 2 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable Thorium-232 (pCi/L) was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Arsenic (mg/L)

General Statistics			
Total Number of Observations	6	Number of Distinct Observations	4
		Number of Missing Observations	11
Number of Detects	3	Number of Non-Detects	3
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	0.0035	Minimum Non-Detect	0.05
Maximum Detect	0.25	Maximum Non-Detect	0.05
Variance Detects	0.0181	Percent Non-Detects	50%
Mean Detects	0.158	SD Detects	0.134
Median Detects	0.22	CV Detects	0.852
Skewness Detects	-1.636	Kurtosis Detects	N/A
Mean of Logged Detects	-2.852	SD of Logged Detects	2.428

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).
The Chebyshev UCL often results in gross overestimates of the mean.
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.84	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.753	Detected Data appear Normal at 1% Significance Level	
Lilliefors Test Statistic	0.345	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.429	Detected Data appear Normal at 1% Significance Level	
Detected Data appear Normal at 1% Significance Level			
Note GOF tests may be unreliable for small sample sizes			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.0807	KM Standard Error of Mean	0.0547
90KM SD	0.109	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.191	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.171	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.245	95% KM Chebyshev UCL	0.319
97.5% KM Chebyshev UCL	0.422	99% KM Chebyshev UCL	0.625
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.587	Anderson-Darling GOF Test	
5% A-D Critical Value	0.647	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.423	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.446	Detected data appear Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.613	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.258	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	3.675	nu star (bias corrected)	N/A
Mean (detects)	0.158		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0035	Mean	0.0943
Maximum	0.25	Median	0.041
SD	0.111	CV	1.178
k hat (MLE)	0.658	k star (bias corrected MLE)	0.44
Theta hat (MLE)	0.143	Theta star (bias corrected MLE)	0.214
nu hat (MLE)	7.901	nu star (bias corrected)	5.284
Adjusted Level of Significance (β)	0.0122		
Approximate Chi Square Value (5.28, α)	1.286	Adjusted Chi Square Value (5.28, β)	0.707
95% Gamma Approximate UCL	0.387	95% Gamma Adjusted UCL	N/A
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.0807	SD (KM)	0.109
Variance (KM)	0.012	SE of Mean (KM)	0.0547
k hat (KM)	0.543	k star (KM)	0.383
nu hat (KM)	6.516	nu star (KM)	4.591
theta hat (KM)	0.149	theta star (KM)	0.211
80% gamma percentile (KM)	0.129	90% gamma percentile (KM)	0.23
95% gamma percentile (KM)	0.34	99% gamma percentile (KM)	0.62
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.59, α)	0.968	Adjusted Chi Square Value (4.59, β)	0.501
95% KM Approximate Gamma UCL	0.383	95% KM Adjusted Gamma UCL	0.739
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.772	Shapiro Wilk GOF Test	
10% Shapiro Wilk Critical Value	0.789	Detected Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.376	Lilliefors GOF Test	
10% Lilliefors Critical Value	0.389	Detected Data appear Lognormal at 10% Significance Level	
Detected Data appear Approximate Lognormal at 10% Significance Level			
Note GOF tests may be unreliable for small sample sizes			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0821	Mean in Log Scale	-4.212
SD in Original Scale	0.119	SD in Log Scale	2.301
95% t UCL (assumes normality of ROS data)	0.18	95% Percentile Bootstrap UCL	0.159
95% BCA Bootstrap UCL	0.163	95% Bootstrap t UCL	1.813
95% H-UCL (Log ROS)	1811		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.253	KM Geo Mean	0.0142
KM SD (logged)	1.982	95% Critical H Value (KM-Log)	7.637
KM Standard Error of Mean (logged)	0.991	95% H-UCL (KM -Log)	88.45
KM SD (logged)	1.982	95% Critical H Value (KM-Log)	7.637
KM Standard Error of Mean (logged)	0.991		

DL/2 Statistics

DL/2 Normal

Mean in Original Scale	0.0914
SD in Original Scale	0.112
95% t UCL (Assumes normality)	0.183

DL/2 Log-Transformed

Mean in Log Scale	-3.27
SD in Log Scale	1.603
95% H-Stat UCL	12.12

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 1% Significance Level

Suggested UCL to Use

95% KM (t) UCL 0.191

User Identified Distribution:	N/A	User Selected UCL:	Maximum Detect	0.25
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Cadmium (mg/L)

General Statistics

Total Number of Observations	6	Number of Distinct Observations	3
		Number of Missing Observations	11
Number of Detects	1	Number of Non-Detects	5
Number of Distinct Detects	1	Number of Distinct Non-Detects	2

User Identified Distribution:	N/A	User Selected UCL:	Detection	0.00032
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Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Cadmium (mg/L) was not processed!

Copper (mg/L)

General Statistics			
Total Number of Observations	5	Number of Distinct Observations	3
		Number of Missing Observations	12
Number of Detects	2	Number of Non-Detects	3
Number of Distinct Detects	2	Number of Distinct Non-Detects	1
Minimum Detect	0.0034	Minimum Non-Detect	0.0075
Maximum Detect	0.004	Maximum Non-Detect	0.0075
Variance Detects	1.8000E-7	Percent Non-Detects	60%
Mean Detects	0.0037	SD Detects	4.2426E-4
Median Detects	0.0037	CV Detects	0.115
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-5.603	SD of Logged Detects	0.115

Warning: Data set has only 2 Detected Values.
This is not enough to compute meaningful or reliable statistics and estimates.

Note: Sample size is small (e.g., <10), if data are collected using incremental sampling methodology (ISM) approach, refer also to ITRC Tech Reg Guide on ISM (ITRC 2020 and ITRC 2012) for additional guidance, but note that ITRC may recommend the t-UCL or the Chebyshev UCL for small sample sizes (n < 7).
The Chebyshev UCL often results in gross overestimates of the mean.
Refer to the ProUCL 5.2 Technical Guide for a discussion of the Chebyshev UCL.

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.0037	KM Standard Error of Mean	3.0000E-4
90KM SD	3.0000E-4	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00434	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00419	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0046	95% KM Chebyshev UCL	0.00501
97.5% KM Chebyshev UCL	0.00557	99% KM Chebyshev UCL	0.00668

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only			
k hat (MLE)	151.8	k star (bias corrected MLE)	N/A
Theta hat (MLE)	2.4378E-5	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	607.1	nu star (bias corrected)	N/A
Mean (detects)	0.0037		

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.0037	SD (KM)	3.0000E-4
Variance (KM)	9.0000E-8	SE of Mean (KM)	3.0000E-4
k hat (KM)	152.1	k star (KM)	60.98
nu hat (KM)	1521	nu star (KM)	609.8
theta hat (KM)	2.4324E-5	theta star (KM)	6.0678E-5
80% gamma percentile (KM)	0.00409	90% gamma percentile (KM)	0.00432
95% gamma percentile (KM)	0.00451	99% gamma percentile (KM)	0.00489

Gamma Kaplan-Meier (KM) Statistics			
		Adjusted Level of Significance (β)	0.0086
Approximate Chi Square Value (609.78, α)	553.5	Adjusted Chi Square Value (609.78, β)	529.7
95% KM Approximate Gamma UCL	0.00408	95% KM Adjusted Gamma UCL	0.00426

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0037	Mean in Log Scale	-5.603
SD in Original Scale	3.9480E-4	SD in Log Scale	0.107
95% t UCL (assumes normality of ROS data)	0.00408	95% Percentile Bootstrap UCL	0.00396
95% BCA Bootstrap UCL	0.00396	95% Bootstrap t UCL	0.00415
95% H-UCL (Log ROS)	0.00414		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.603	KM Geo Mean	0.00369
KM SD (logged)	0.0813	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0813	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0813	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0813		

DL/2 Statistics

DL/2 Normal

Mean in Original Scale	0.00373
SD in Original Scale	2.1389E-4
95% t UCL (Assumes normality)	0.00393

DL/2 Log-Transformed

Mean in Log Scale	-5.593
SD in Log Scale	0.0582
95% H-Stat UCL	N/A

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution

Suggested UCL to Use

Recommendation cannot be provided

User Identified Distribution:	N/A	User Selected UCL:	Maximum Detect	0.004
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Iron (mg/L)

General Statistics

Total Number of Observations	7	Number of Distinct Observations	4
		Number of Missing Observations	10
Number of Detects	1	Number of Non-Detects	6
Number of Distinct Detects	1	Number of Distinct Non-Detects	3

User Identified Distribution:	N/A	User Selected UCL:	Detection	9.1
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Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Iron (mg/L) was not processed!

Manganese (mg/L)

General Statistics			
Total Number of Observations	15	Number of Distinct Observations	14
		Number of Missing Observations	2
Number of Detects	14	Number of Non-Detects	1
Number of Distinct Detects	13	Number of Distinct Non-Detects	1
Minimum Detect	0.0161	Minimum Non-Detect	0.15
Maximum Detect	8.5	Maximum Non-Detect	0.15
Variance Detects	4.652	Percent Non-Detects	6.667%
Mean Detects	1.125	SD Detects	2.157
Median Detects	0.536	CV Detects	1.917
Skewness Detects	3.542	Kurtosis Detects	12.91
Mean of Logged Detects	-0.848	SD of Logged Detects	1.597
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.455	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.825	Detected Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.378	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.263	Detected Data Not Normal at 1% Significance Level	
Detected Data Not Normal at 1% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1.051	KM Standard Error of Mean	0.543
90KM SD	2.027	95% KM (BCA) UCL	2.133
95% KM (t) UCL	2.008	95% KM (Percentile Bootstrap) UCL	2.095
95% KM (z) UCL	1.944	95% KM Bootstrap t UCL	5.285
90% KM Chebyshev UCL	2.68	95% KM Chebyshev UCL	3.418
97.5% KM Chebyshev UCL	4.443	99% KM Chebyshev UCL	6.455
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.052	Anderson-Darling GOF Test	
5% A-D Critical Value	0.781	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.234	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.239	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.635	k star (bias corrected MLE)	0.546
Theta hat (MLE)	1.773	Theta star (bias corrected MLE)	2.06
nu hat (MLE)	17.77	nu star (bias corrected)	15.29
Mean (detects)	1.125		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.051
Maximum	8.5	Median	0.496
SD	2.098	CV	1.997
k hat (MLE)	0.546	k star (bias corrected MLE)	0.481
Theta hat (MLE)	1.924	Theta star (bias corrected MLE)	2.183
nu hat (MLE)	16.38	nu star (bias corrected)	14.44
Adjusted Level of Significance (β)	0.0324		
Approximate Chi Square Value (14.44, α)	6.871	Adjusted Chi Square Value (14.44, β)	6.238
95% Gamma Approximate UCL	2.207	95% Gamma Adjusted UCL	2.431

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1.051	SD (KM)	2.027
Variance (KM)	4.108	SE of Mean (KM)	0.543
k hat (KM)	0.269	k star (KM)	0.26
nu hat (KM)	8.069	nu star (KM)	7.788
theta hat (KM)	3.908	theta star (KM)	4.049
80% gamma percentile (KM)	1.546	90% gamma percentile (KM)	3.146
95% gamma percentile (KM)	5.031	99% gamma percentile (KM)	10.02

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (7.79, α)	2.613	Adjusted Chi Square Value (7.79, β)	2.258
95% KM Approximate Gamma UCL	3.133	95% KM Adjusted Gamma UCL	3.625

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.847	Shapiro Wilk GOF Test	
10% Shapiro Wilk Critical Value	0.895	Detected Data Not Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.269	Lilliefors GOF Test	
10% Lilliefors Critical Value	0.208	Detected Data Not Lognormal at 10% Significance Level	

Detected Data Not Lognormal at 10% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.053	Mean in Log Scale	-1.005
SD in Original Scale	2.097	SD in Log Scale	1.655
95% t UCL (assumes normality of ROS data)	2.006	95% Percentile Bootstrap UCL	2.061
95% BCA Bootstrap UCL	2.771	95% Bootstrap t UCL	5.203
95% H-UCL (Log ROS)	8.087		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.063	KM Geo Mean	0.346
KM SD (logged)	1.69	95% Critical H Value (KM-Log)	3.967
KM Standard Error of Mean (logged)	0.453	95% H-UCL (KM -Log)	8.645
KM SD (logged)	1.69	95% Critical H Value (KM-Log)	3.967
KM Standard Error of Mean (logged)	0.453		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.055	Mean in Log Scale	-0.964
SD in Original Scale	2.096	SD in Log Scale	1.603
95% t UCL (Assumes normality)	2.008	95% H-Stat UCL	7.031

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Adjusted Gamma UCL 3.625

User Identified Distribution:	X	User Selected UCL:	95% KM Chebyshev UCL	3.418
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The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

If the data were collected using judgmental or other non-random methods,
then contact a statistician to correctly calculate UCLs.

When a data set follows an approximate distribution passing only one of the GOF tests,
it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Table D-10-9. ProUCL Inputs for Uncensored Full Surface Water Data Sets, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Uranium-233/234 (pCi/L)	D_Uranium-233/234 (pCi/L)	Uranium-235/236 (pCi/L)	D_Uranium-235/236 (pCi/L)	Uranium-238 (pCi/L)	D_Uranium-238 (pCi/L)	Barium (mg/L)	D_Barium (mg/L)	Boron (mg/L)	D_Boron (mg/L)	Calcium (mg/L)	D_Calcium (mg/L)
										480	1
						0.067	1			500	1
										492	1
										610	1
										820	1
										300	1
										450	1
										410	1
										106	1
										550	1
2460	1	163	1	2200	1	0.079	1	6.48	1	574	1
						0.121	1	23.7	1	102	1
						0.12	1	22.3	1	111	1
2410	1	135	1	2070	1	0.087	1	6.45	1	596	1
						0.121	1	22.5	1	132	1

Chloride (mg/L)	D_Chloride (mg/L)	Magnesium (mg/L)	D_Magnesium (mg/L)	Nickel (mg/L)	D_Nickel (mg/L)	Potassium (mg/L)	D_Potassium (mg/L)	Selenium (mg/L)	D_Selenium (mg/L)	Sodium (mg/L)	D_Sodium (mg/L)	Strontium (mg/L)
2500	1	4400	1			350	1	2	1	11000	1	11
3600	1	8400	1			1100	1	4.7	1	18000	1	15
2160	1	4910	1			359	1	2.47	1	12400	1	11.5
3000	1	11000	1			790	1	5.4	1	25000	1	18
5500	1	16000	1			1200	1	5.8	1	22000	1	20
37000	1	21000	1			7300	1	22	1	68000	1	14
6900	1	6800	1			1600	1	5	1	16000	1	9.6
17000	1	16000	1			3700	1	15	1	42000	1	13
711	1	808	1			143	1	0.704	1	1950	1	1.79
13000	1	16000	1			1900	1	10	1	34000	1	19
4890	1	11200	1	0.0231	1	821	1	5.77	1	18900	1	17.3
17200	1	31400	1	0.0726	1	2910	1			79100	1	16.3
17400	1	31300	1	0.0653	1	2740	1			77200	1	16.1
4990	1	11600	1	0.0247	1	860	1	5.69	1	20700	1	17.9
17400	1	33500	1	0.0691	1	2790	1			80300	1	20.2

D_Strontium (mg/L)	Thallium (mg/L)	D_Thallium (mg/L)	Uranium (mg/L)	D_Uranium (mg/L)	Zinc (mg/L)	D_Zinc (mg/L)	Ammonia Total as N (mg/L)	D_Ammonia Total as N (mg/L)	Ammonia Un- ionized as NH3 (mg/L)	D_Ammonia Un- ionized as NH3 (mg/L)
			2.6	1			27	1		
1			4.9	1			15	1		
1			3.07	1			15.8	1		
1			6.5	1			8.3	1		
1			7.9	1			14	1		
1			31	1			36	1		
1			8	1			18	1		
1			22	1			21	1		
1			0.874	1			10.4	1		
1			17	1			14	1		
1	0.0138	1	7.94	1	0.0551	1			10	1
1	0.0358	1	18.6	1	0.15	1	55.5	1		
1	0.0369	1	19.3	1	0.246	1	23.8	1		
1	0.015	1	9.24	1	0.0298	1				
1	0.0382	1	19.6	1	0.115	1	33.7	1	8.15	1

Fluoride (mg/L)	D_Fluoride (mg/L)	Nitrate + Nitrite as Nitrogen (mg/L)	D_Nitrate + Nitrite as Nitrogen (mg/L)	pH	D_pH	Sulfate (mg/L)	D_Sulfate (mg/L)	Total Residual Chlorine (mg/L)	D_Total Residual Chlorine (mg/L)	Silica (mg/L)	D_Silica (mg/L)
		1400	1	8.34	1	40000	1	0.04	1		
		2100	1	8.18	1	70000	1	0.06	1		
		1490	1	8.07	1	40600	1				
		3600	1	8.43	1	65000	1				
		5400	1	8.08	1	84000	1				
		19000	1	7.54	1	170000	1				
		4000	1	8.43	1	51000	1				
		10000	1	7.77	1	130000	1				
		493	1	7.97	1	5340	1				
		8200	1	8.52	1	120000	1				
				7.21	1						
6.85	1	3280	1	8.32	1	75200	1			56.7	1
24.2	1	11700	1	7.29	1	275000	1			93.7	1
11.3	1	9170	1			273000	1			86.3	1
7.28	1	3280	1	8.31	1	77300	1			58.1	1
11.9	1	6410	1	7.24	1	284000	1			90.2	1

Table D-10-10. ProUCL Inputs for Surface Water Data Sets with Non-Detects, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Thorium-232 (pCi/L)	D_Thorium-232 (pCi/L)	Arsenic (mg/L)	D_Arsenic (mg/L)	Cadmium (mg/L)	D_Cadmium (mg/L)	Copper (mg/L)	D_Copper (mg/L)	Iron (mg/L)	D_Iron (mg/L)	Manganese (mg/L)	D_Manganese (mg/L)
										0.75	1
		0.0035	1	0.00032	1					0.3	1
										0.472	1
										0.15	0
										0.3	1
										1.4	1
										0.65	1
								0.3	0	1.2	1
										0.479	1
								9.1	1	8.5	1
2.03	1	0.22	1	0.0015	0	0.0034	1	0.03	0	0.0161	1
		0.05	0	0.0075	0	0.0075	0	3	0	0.496	1
		0.05	0	0.0075	0	0.0075	0	3	0	0.575	1
1.14	0	0.25	1	0.0015	0	0.004	1	0.03	0	0.0181	1
		0.05	0	0.0075	0	0.0075	0	3	0	0.594	1

Table D-10-11. Transposed Surface Water Data for ProUCL with Detect Flags, Groundwater Evaporation Pond, Shiprock, New Mexico, Disposal Site

Location	Sample ID	Date Sampled	Thorium-228 (pCi/L)	D_Thorium-228 (pCi/L)	Thorium-230 (pCi/L)	D_Thorium-230 (pCi/L)	Thorium-232 (pCi/L)	D_Thorium-232 (pCi/L)	Uranium-233/234 (pCi/L)	D_Uranium-233/234 (pCi/L)
1215	1215-0-20160323-N001/N001-B	3/23/2016								
1215	1215-0-20160928-0001	9/28/2016								
1215	1215-0-20160928-N002	9/28/2016								
1215	1215-0-20160928-N002	3/28/2017								
1215	SHP02-01.1709001-071	9/28/2017								
1215	SHP02-01.1803002-071	3/22/2018								
1215	SHP02-01.1809003-071	9/11/2018								
1215	SHP02-01.1903004-071	3/27/2019								
1215	SHP02-01.1909005-071	9/9/2019								
1215	SHP02-01.2109006-074	9/23/2021								
1215	SHP02-01.2203007-074	3/21/2022								
1215	SHP02-01.2209008-068	9/27/2022								
1342	SHP02-02.1712001-001	12/5/2017	-0.288	0	2.78	0	2.03	1	2460	1
1342	SHP02-02.1807002-001	7/10/2018								
1342	SHP02-02.1807002-003 (Dup of -001)	7/10/2018								
1343	SHP02-02.1712001-002	12/5/2017	-0.415	0	1.53	0	1.14	0	2410	1
1343	SHP02-02.1807002-002	7/10/2018								

Uranium-235/236 (pCi/L)	D_Uranium-235/236 (pCi/L)	Uranium-238 (pCi/L)	D_Uranium-238 (pCi/L)	Aluminum (mg/L)	D_Aluminum (mg/L)	Arsenic (mg/L)	D_Arsenic (mg/L)	Barium (mg/L)	D_Barium (mg/L)	Beryllium (mg/L)	D_Beryllium (mg/L)	Boron (mg/L)	D_Boron (mg/L)
						0.0035	1	0.067	1				
163	1	2200	1	0.068	0	0.22	1	0.079	1	0.001	0	6.48	1
				6.8	0	0.05	0	0.121	1	0.1	0	23.7	1
				6.8	0	0.05	0	0.12	1	0.1	0	22.3	1
135	1	2070	1	0.068	0	0.25	1	0.087	1	0.001	0	6.45	1
				6.8	0	0.05	0	0.121	1	0.1	0	22.5	1

Cadmium (mg/L)	D_Cadmium (mg/L)	Calcium (mg/L)	D_Calcium (mg/L)	Chloride (mg/L)	D_Chloride (mg/L)	Chromium (mg/L)	D_Chromium (mg/L)	Copper (mg/L)	D_Copper (mg/L)	Iron (mg/L)	D_Iron (mg/L)	Lead (mg/L)	D_Lead (mg/L)	Magnesium (mg/L)	D_Magnesium (mg/L)
		480	1	2500	1									4400	1
0.00032	1	500	1	3600	1							0.00055	0	8400	1
		492	1	2160	1									4910	1
		610	1	3000	1									11000	1
		820	1	5500	1									16000	1
		300	1	37000	1									21000	1
		450	1	6900	1									6800	1
		410	1	17000	1					0.3	0			16000	1
		106	1	711	1									808	1
		550	1	13000	1					9.1	1			16000	1
0.0015	0	574	1	4890	1	0.015	0	0.0034	1	0.03	0	0.0025	0	11200	1
0.0075	0	102	1	17200	1	0.075	0	0.0075	0	3	0	0.0125	0	31400	1
0.0075	0	111	1	17400	1	0.075	0	0.0075	0	3	0	0.0125	0	31300	1
0.0015	0	596	1	4990	1	0.015	0	0.004	1	0.03	0	0.0025	0	11600	1
0.0075	0	132	1	17400	1	0.075	0	0.0075	0	3	0	0.0125	0	33500	1

Manganese (mg/L)	D_Manganese (mg/L)	Mercury (mg/L)	D_Mercury (mg/L)	Nickel (mg/L)	D_Nickel (mg/L)	Potassium (mg/L)	D_Potassium (mg/L)	Selenium (mg/L)	D_Selenium (mg/L)	Silver (mg/L)	D_Silver (mg/L)	Sodium (mg/L)	D_Sodium (mg/L)	Strontium (mg/L)
0.75	1					350	1	2	1			11000	1	11
0.3	1					1100	1	4.7	1			18000	1	15
0.472	1					359	1	2.47	1			12400	1	11.5
0.15	0					790	1	5.4	1			25000	1	18
0.3	1					1200	1	5.8	1			22000	1	20
1.4	1					7300	1	22	1			68000	1	14
0.65	1					1600	1	5	1			16000	1	9.6
1.2	1					3700	1	15	1			42000	1	13
0.479	1					143	1	0.704	1			1950	1	1.79
8.5	1					1900	1	10	1			34000	1	19
0.0161	1	0.000067	0	0.0231	1	821	1	5.77	1	0.003	0	18900	1	17.3
0.496	1			0.0726	1	2910	1			0.0075	0	79100	1	16.3
0.575	1			0.0653	1	2740	1			0.0075	0	77200	1	16.1
0.0181	1	0.000067	0	0.0247	1	860	1	5.69	1	0.003	0	20700	1	17.9
0.594	1			0.0691	1	2790	1			0.0075	0	80300	1	20.2

D_Strontium (mg/L)	Thallium (mg/L)	D_Thallium (mg/L)	Uranium (mg/L)	D_Uranium (mg/L)	Zinc (mg/L)	D_Zinc (mg/L)	Ammonia Total as N (mg/L)	D_Ammonia Total as N (mg/L)	Ammonia Un- ionized as NH3 (mg/L)	D_Ammonia Un- ionized as NH3 (mg/L)	Fluoride (mg/L)	D_Fluoride (mg/L)	Nitrate + Nitrite as Nitrogen (mg/L)
			2.6	1			27	1					1400
1			4.9	1			15	1					2100
1			3.07	1			15.8	1					1490
1			6.5	1			8.3	1					3600
1			7.9	1			14	1					5400
1			31	1			36	1					19000
1			8	1			18	1					4000
1			22	1			21	1					10000
1			0.874	1			10.4	1					493
1			17	1			14	1					8200
1	0.0138	1	7.94	1	0.0551	1			10	1	6.85	1	3280
1	0.0358	1	18.6	1	0.15	1	55.5	1			24.2	1	11700
1	0.0369	1	19.3	1	0.246	1	23.8	1			11.3	1	9170
1	0.015	1	9.24	1	0.0298	1					7.28	1	3280
1	0.0382	1	19.6	1	0.115	1	33.7	1	8.15	1	11.9	1	6410

D_Nitrate + Nitrite as Nitrogen (mg/L)	pH	D_pH	Sulfate (mg/L)	D_Sulfate (mg/L)	Total Residual Chlorine (mg/L)	D_Total Residual Chlorine (mg/L)	Methanol (µg/L)	D_Methanol (µg/L)	Silica (mg/L)	D_Silica (mg/L)
1	8.34	1	40000	1	0.04	1				
1	8.18	1	70000	1	0.06	1				
1	8.07	1	40600	1						
1	8.43	1	65000	1						
1	8.08	1	84000	1						
1	7.54	1	170000	1						
1	8.43	1	51000	1						
1	7.77	1	130000	1						
1	7.97	1	5340	1						
1	8.52	1	120000	1						
	7.21	1								
1	8.32	1	75200	1			200	0	56.7	1
1	7.29	1	275000	1					93.7	1
1			273000	1					86.3	1
1	8.31	1	77300	1			200	0	58.1	1
1	7.24	1	284000	1					90.2	1

1215	1215		1215		1215		1215		1342		1342		1342		1343		1343	
1.1903004-071	SHP02-01.1909005-071		SHP02-01.2109006-074		SHP02-01.2203007-074		SHP02-01.2209008-068		SHP02-02.1712001-001		SHP02-02.1807002-001		SHP02-02.1807002-003 (Dup of -001)		SHP02-02.1712001-002		SHP02-02.1807002-002	
27/2019	9/9/2019		9/23/2021		3/21/2022		9/27/2022		12/5/2017		7/10/2018		7/10/2018		12/5/2017		7/10/2018	
Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag	Result	Detect Flag
---	---	---	---	---	---	---	---	---	-0.288	0	---	---	---	---	-0.415	0	---	---
---	---	---	---	---	---	---	---	---	2.78	0	---	---	---	---	1.53	0	---	---
---	---	---	---	---	---	---	---	---	2.03	1	---	---	---	---	1.14	0	---	---
---	---	---	---	---	---	---	---	---	2460	1	---	---	---	---	2410	1	---	---
---	---	---	---	---	---	---	---	---	163	1	---	---	---	---	135	1	---	---
---	---	---	---	---	---	---	---	---	2200	1	---	---	---	---	2070	1	---	---
---	---	---	---	---	---	---	---	---	0.068	0	6.8	0	6.8	0	0.068	0	6.8	0
---	---	---	---	---	---	---	---	---	0.22	1	0.05	0	0.05	0	0.25	1	0.05	0
---	---	---	---	---	---	---	---	---	0.079	1	0.121	1	0.12	1	0.087	1	0.121	1
---	---	---	---	---	---	---	---	---	0.001	0	0.1	0	0.1	0	0.001	0	0.1	0
---	---	---	---	---	---	---	---	---	6.48	1	23.7	1	22.3	1	6.45	1	22.5	1
---	---	---	---	---	---	---	---	---	0.0015	0	0.0075	0	0.0075	0	0.0015	0	0.0075	0
1	410	1	106	1	550	1	---	---	574	1	102	1	111	1	596	1	132	1
1	17000	1	711	1	13000	1	---	---	4890	1	17200	1	17400	1	4990	1	17400	1
---	---	---	---	---	---	---	---	---	0.015	0	0.075	0	0.075	0	0.015	0	0.075	0
---	---	---	---	---	---	---	---	---	0.0034	1	0.0075	0	0.0075	0	0.004	1	0.0075	0
---	0.3	0	---	---	9.1	1	---	---	0.03	0	3	0	3	0	0.03	0	3	0
---	---	---	---	---	---	---	---	---	0.0025	0	0.0125	0	0.0125	0	0.0025	0	0.0125	0
1	16000	1	808	1	16000	1	---	---	11200	1	31400	1	31300	1	11600	1	33500	1
1	1.2	1	0.479	1	8.5	1	---	---	0.0161	1	0.496	1	0.575	1	0.0181	1	0.594	1
---	---	---	---	---	---	---	---	---	0.000067	0	---	---	---	---	0.000067	0	---	---
---	---	---	---	---	---	---	---	---	0.0231	1	0.0726	1	0.0653	1	0.0247	1	0.0691	1
1	3700	1	143	1	1900	1	---	---	821	1	2910	1	2740	1	860	1	2790	1
1	15	1	0.704	1	10	1	---	---	5.77	1	---	---	---	---	5.69	1	---	---
---	---	---	---	---	---	---	---	---	0.003	0	0.0075	0	0.0075	0	0.003	0	0.0075	0
1	42000	1	1950	1	34000	1	---	---	18900	1	79100	1	77200	1	20700	1	80300	1
1	13	1	1.79	1	19	1	---	---	17.3	1	16.3	1	16.1	1	17.9	1	20.2	1
---	---	---	---	---	---	---	---	---	0.0138	1	0.0358	1	0.0369	1	0.015	1	0.0382	1
1	22	1	0.874	1	17	1	---	---	7.94	1	18.6	1	19.3	1	9.24	1	19.6	1
---	---	---	---	---	---	---	---	---	0.0551	1	0.15	1	0.246	1	0.0298	1	0.115	1
1	21	1	10.4	1	14	1	---	---	---	---	55.5	1	23.8	1	---	---	33.7	1
---	---	---	---	---	---	---	---	---	10	1	---	---	---	---	---	---	8.15	1
---	---	---	---	---	---	---	---	---	6.85	1	24.2	1	11.3	1	7.28	1	11.9	1
1	10000	1	493	1	8200	1	---	---	3280	1	11700	1	9170	1	3280	1	6410	1
1	7.77	1	7.97	1	8.52	1	7.21	1	8.32	1	7.29	1	---	---	8.31	1	7.24	1
1	130000	1	5340	1	120000	1	---	---	75200	1	275000	1	273000	1	77300	1	284000	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	---	---	---	---	200	0	---	---	---	---	200	0	---	---
---	---	---	---	---	---	---	---	---	56.7	1	93.7	1	86.3	1	58.1	1	90.2	1

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ATTACHMENT D-11

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Table D-11-1. Select Non-Default Input Parameters for RESRAD-ONSITE and RESRAD OFFSITE Models

Category	Parameter	Alternative 1			Alternatives 2 & 3	
		Onsite Worker ^a (RESRAD-ONSITE)	Onsite Trespasser (RESRAD-ONSITE)	Offsite Resident Farmer (RESRAD-OFFSITE)	Onsite Remediation Worker (RESRAD-ONSITE)	Offsite Resident Farmer (During Remedy: RESRAD OFFSITE; Post-Remedy: RESRAD- ONSITE)
Pathways	External Radiation	•	•	•	•	•
	Inhalation	•	•	•	•	•
	Plant Ingestion			•		•
	Meat Ingestion			•		•
	Milk Ingestion			•		•
	Drinking Water			•		•
	Soil (Sediment) Ingestion ^b	•	•	•	•	•
Physical Parameters	Area of Contaminated Zone (m ²) ^c	44,515				
	Thickness of the Contaminated Zone (m) ^d	1				
Cover and Contaminated Zone Hydrological Parameters	Cover Depth (m) ^e	0.1524		0	0	0
	Density of the Cover Material (g/cm ³) ^f	1	1	Not Applicable	Not Applicable	
	Cover Erosion Rate (m/year) ^g	Not Applicable				
	Contaminated Zone Erosion Rate (m/year) ^h	0	0	0.001	0.001	0.001
	Density of Contaminated Zone (g/cm ³) ⁱ	2.2				
	Wind Speed (m/s) ^j	3.26				
	Precipitation (m/yr) ^k	0.167				

Exposure Parameters	Inhalation Rate (m ³ /year) ^l	10,550	8,486	7,007	18,396	7,007
	Mass Loading for Inhalation from Primary Contamination Zone (g/m ³) ^m	0.000000016	0.0000007	0.0000007	0.0175	During Remedy: 0.0175 Post-Remedy: 0.0000007
	Exposure Duration (year) ⁿ	25	10	26	1	26
	Indoor Dust Filtration Factor ^o	0.4	1	0.4	1	0.4
	External Gamma Shielding Factor ^p	0.7	1	0.7	1	0.7
	Indoor Time Fraction ^q	0.114	0	0.655	0	0.655
	Outdoor Time Fraction ^r	0.114	0.0086	0.0799	0.25	0.0799
	Sediment Ingestion (g/year) ^s	36.5	36.5	36.5	120.45	36.5
	Groundwater Ingestion Rate (L/year) ^t	Not Applicable		510	Not Applicable	510
	Fruit, Grain & Non-leafy Vegetable Ingestion Rate (kg/year) ^t	Not Applicable		160	Not Applicable	160
	Leafy Vegetable Ingestion Rate (kg/year) ^t	Not Applicable		14	Not Applicable	14
	Meat Ingestion Rate (kg/year) [†]	Not Applicable		63	Not Applicable	63
	Milk Ingestion Rate (L/year) [‡]	Not Applicable		92	Not Applicable	92
Resident Farm Areas	Fruit, Grain & Non-leafy Vegetable Area (m ²) ^u	Not Applicable		1,000	Not Applicable	1,000
	Leafy Vegetable Area (m ²) ^u	Not Applicable		1,000	Not Applicable	1,000
	Pasture, Silage Area (m ²) ^u	Not Applicable		10,000	Not Applicable	10,000
	Grain Area (m ²) ^u	Not Applicable		10,000	Not Applicable	10,000
	Dwelling Area (m ²) ^u	Not Applicable		1,800	Not Applicable	1,800
Atmospheric Transport	Meteorological Data ^v	Not Applicable		Farmington, NM	Not Applicable	Farmington, NM

Cancer Slope (Risk) Factor and Dose Conversion Factor Model Libraries	Internal Dose Library	DCFPAK3.02 (Adult)	DCFPAK3.02 (Age 15)	DCFPAK3.02 (Adult)	DCFPAK3.02 (Adult)	DCFPAK3.02 (Adult)
	External Dose Library	DCFPAK3.02	DCFPAK3.02	DCFPAK3.02	DCFPAK3.02	DCFPAK3.02
	Risk Factors	DFPAK3.02 Morbidity	DFPAK3.02 Morbidity	DFPAK3.02 Morbidity	DFPAK3.02 Morbidity	DFPAK3.02 Morbidity

^a Site Worker is evaluated only under Alternative 1. This receptor is not evaluated under Alternatives 2 and 3 because the remediation worker is evaluated (no PPE assumed). The remediation worker is the more health-conservative of the two worker receptor scenarios under Alternatives 2 and 3 because exposures are more contact-intensive.

^b Pond sediment ingestion is evaluated for the site worker and trespasser under Alternative 1 and the remediation worker under Alternatives 2 and 3. Soil ingestion is evaluated for the offsite resident under Alternatives 2 and 3.

^c Contaminated zone area (i.e., source area) is the area of the groundwater evaporation pond, 11 acres (i.e., 44,515 m²).

^d Contaminated zone thickness is assumed to be the combined depth of the loose and hardened sediment, HDPE liner, clay sublayer and underlying subsurface soil.

^e Cover depth under Alternative 1 is assumed to be surface water present to a depth of 6 inches (i.e., 0.1524 m).

^f For Alternative 1 receptor scenarios, the density of cover material is the density of water.

^g Cover erosion rate assumes a cover of soil or other consolidated material, which is not applicable to the evaluation of the evaporation pond under all alternative scenarios.

^h Default value is applied to the contaminated zone erosion rate under Alternatives 2 and 3. Under Alternative 1 (no-action), no sediment erosion is assumed to occur from the evaporation pond.

ⁱ Contaminated zone density is the specific gravity of rock salt.

^j Wind speed is the average value calculated using 2022 data from the cliffRouterMet station located on top of the disposal cell. See also the wind rose in Figure 36.

^k Annual precipitation rate based on 2022 data from the cliffRouterMet station located on top of the disposal cell.

^l Inhalation rates were calculated as described below.

Onsite Worker - Inhalation rate = 1.2 m³/hr x 8,760 hrs/yr = 10,550 m³/yr. 1.2 m³/hr is from Table 6.23 of Volume 1 of NUREG/CR-5512 (NRC 1992).

Onsite Trespasser - This receptor is assumed to include the 11 through 20 year old age group. From Table 6-1 of the Exposure Factors Handbook: 2011 Edition (EPA, 2011), the 95th percentile inhalation rate for males and females is calculated as 23.25 m³/day from across two age groups (i.e., 11 to less than 16 years and 16 to less than 21 years). Therefore, 23.25 m³/day x 365 days/yr = 8,486 m³/yr.

Pond Remediation Worker - Inhalation rate is based on value for moderate activity for adult males and females (2.1 m³/hour), obtained from EPA's *Exposure Factors Handbook: 2011 Edition* (EPA 2011), converted to m³/year as follows: 2.1 m³/hour x 8,760 hours/year = 18,396 m³/year

Offsite Resident Farmer - See Table D-11-2 for calculation of inhalation rate for aggregate receptor.

^m Mass loading factors for inhalation are calculated as the inverse of the particulate emission factors (PEFs) calculated for each receptor as indicated below.

Onsite Worker - Attachment D-14-2 risk calculations for onsite worker under Alternative 1 using RAIS online calculator for chemicals.

Onsite Trespasser - See Attachment D-2-1 screening level calculations for onsite trespasser under Alternative 1 using RAIS online calculator. Calculated from EPA PEF default value of 1.36E+09 m³/kg for wind erosion.

Pond Remediation Worker - See Attachment D-2-3 screening level calculations for the pond remediation worker under Alternatives 2/3 using the RAIS online calculator.

Offsite Resident Farmer - Alternative 1: Calculated from EPA PEF default value of 1.36E+09 m³/kg for wind erosion (scenario evaluated using RESRAD-OFFSITE).

During Alternatives 2/3: Attachment D-2-3 screening level calculations for the pond remediation worker under Alternatives 2/3 using the RAIS online calculator (scenario evaluated using RESRAD-OFFSITE).

Alternatives 2/3 Post-Remedy: Calculated from EPA PEF default value of 1.36E+09 m³/kg for wind erosion (scenario at offsite locations evaluated using RESRAD-ONSITE).

ⁿ Exposure durations for the site worker and offsite resident were obtained from EPA's *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors* (EPA (2014). The exposure duration for a trespasser assumes an individual, ages 11 through 20 years old. The exposure duration for the remediation worker assumes that remediation lasts approximately 1 year, which is EPA's minimum assumption for construction work and the RESRAD model default assumption.

^o The RESRAD-ONSITE default value of 0.4 is applied to the site worker and offsite resident receptors. A value of 1.0 is applied to receptors for whom all exposures are assumed to occur outdoors (i.e., the remediation worker and trespasser receptors), indicating that no dust filtration occurs.

^p The RESRAD-ONSITE default value of 0.7 is applied to the site worker and offsite resident receptors who are assumed to spend time indoors. A value of 1.0 is applied to receptors for whom all exposures are assumed to occur outdoors (i.e., the remediation worker and trespasser receptors), indicating that no shielding occurs.

^q Indoor time fraction for each receptor is calculated as follows:

Onsite Worker - It is assumed 4 hours per workday is spent indoors for 250 days per year = $(4 \text{ hrs/day} \times 250 \text{ days/yr})/8,760 \text{ hrs/yr} = 0.114$.

Onsite Trespasser - All time spent at the evaporation pond is outdoors; therefore, the indoor time fraction is 0.

Pond Remediation Worker - All time spent at the evaporation pond is conservatively assumed to be outdoors; therefore, the indoor time fraction is 0.

Offsite Resident Farmer - It is assumed that a resident spends 16.4 hours per day, 350 days per year indoors at their residence (EPA, 1997a); therefore the indoor time fraction = $(16.4 \text{ hrs/day} \times 350 \text{ days/yr})/8,760 \text{ hrs/yr} = 0.655$.

^r Outdoor time fraction for each receptor is calculated as follows:

Onsite Worker - It is assumed 4 hours per workday is spent outdoors for 250 days per year = $(4 \text{ hrs/day} \times 250 \text{ days/yr})/8,760 \text{ hrs/yr} = 0.114$.

Onsite Trespasser - Outdoor fraction is equal to exposures which are assumed to occur 1 hour per day, 75 days per year = $(1 \text{ hr/day} \times 75 \text{ days/yr})/8,760 \text{ hrs/yr} = 0.0086$

Pond Remediation Worker - Outdoor fraction conservatively assumes that all time (10 hours per day for 220 days, per information received in Data Call memorandum) is spent outdoors at the evaporation pond. Therefore the outdoor fraction = $(10 \text{ hrs/day} \times 220 \text{ days/yr})/8,760 \text{ hrs/yr} = 0.25$.

Offsite Resident Farmer - It is assumed that a resident spends 2 hours per day, 350 days per year indoors at their residence (EPA, 1997a); therefore the indoor time fraction = $(2 \text{ hrs/day} \times 350 \text{ days/yr})/8,760 \text{ hrs/yr} = 0.0799$.

^s Sediment/soil ingestion rates were obtained as follows:

Onsite Worker - Ingestion rate based on 100 mg/day for outdoor worker, per EPA's *Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors* (EPA 2014). Ingestion rate (g/year) = $100 \text{ mg/day} \times 0.001 \text{ g/mg} \times 365 \text{ days/year} = 36.5 \text{ g/year}$.

Onsite Trespasser - Ingestion rate based on 100 mg/day for age group obtained from Table 5-1 of EPA's Exposure Assessment Handbook: 2011 Edition (2017 Chapter 5 Update) (EPA, 2011). Ingestion rate (g/year) = $100 \text{ mg/day} \times 0.001 \text{ g/mg} \times 365 \text{ days/year} = 36.5 \text{ g/year}$.

Pond Remediation Worker - Ingestion rate based on 330 mg/day obtained from ORNL's online Radiological PRG Calculator at the Risk Assessment Information System (ORNL 2023). Ingestion rate (g/year) = $330 \text{ mg/day} \times 0.001 \text{ g/mg} \times 365 \text{ days/year} = 120.45 \text{ g/year}$.

Offsite Resident Farmer - Ingestion rate (36.5 g/yr) for an adult is based on 100 mg/kg (EPA 2014). Age-adjusted ingestion rate (44.9 g/yr) is calculated as age-weighted average for the combined young child (200 mg/day, per EPA (2014)) and adult (100 mg/day, per EPA (2014)) as shown below. Averaging is done over the total exposure duration for a resident at one location (26 years, per EPA (2014)).

Ingestion Rate (mg/day) = $[(200 \text{ mg/day} \times 6 \text{ years}) + (100 \text{ mg/day} \times 20 \text{ years})]/26 \text{ years} = 123 \text{ mg/day}$

Ingestion Rate (g/year) = $123 \text{ mg/day} \times 0.001 \text{ g/mg} \times 365 \text{ days/year} = 44.9 \text{ g/year}$

^t The groundwater, homegrown produce, meat, and milk ingestion rates are default values in both the RESRAD-OFFSITE and RESRAD-ONSITE models.

^u Farm land area sizes are based on initial sizes in RESRAD-OFFSITE model upon setup, with some slight alterations occurring during positioning in site layout map in model. Areas are approximations of actual entries for the six offsite resident farmer locations.

^v Meteorological data accessed from RESRAD-OFFSITE STAR library for Farmington, NM.

Table D-11-2. Residential Inhalation Rates

Age Group	Age Wt. Factor (years)	95th Percentile Inhalation Rate (m ³ /day)	95th Percentile Inhalation Rate (m ³ /year)
Birth to <1 year	1	9.2	3,358
1 to <2 years	1	12.8	4,672
2 to <3 years	1	13.7	5,001
3 to <6 years	3	13.8	5,037
6 to <11 years	5	16.6	6,059
11 to <16 years	5	21.9	7,994
16 to <21 years	5	24.6	8,979
21 to <31 years ^b	5	21.3	7,775
Age-Adjusted Inhalation Rates			
Young Child (Ages 0 to 6 Years) Inhalation Rate =			4,690
Ages 7 to 26 Inhalation Rate =			7,702
Resident Inhalation Rate (All Ages) =			7,007

Notes:

^a Age-specific inhalation rates for long-term exposures (males and females combined) were obtained from Table 6-1 of EPA's Exposure Factors Handbook: 2011 Edition (EPA, 2011).

^b Although the 21 to <31 years age grouping covers 10 years, a weighting factor of 5 years is assigned to the grouping assuming the inhalation rate applies to the 21 to <26 years age group, for consistency with EPA's default residential exposure duration.

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Table D-12-1. Cancer Slope Factors - Ingestion, Inhalation, and External Radiation

Radionuclide ^{a,b}	Water Ingestion (risk/pCi)	Dietary (risk/pCi)	Soil Ingestion, Population (risk/pCi)	Soil Worker, Ingestion (risk/pCi)	Inhalation (risk/pCi)	Inhalation, Type ^c	External Radiation		
							Soil Volume (risk/yr per pCi/g)	Submersion (Risk/yr per pCi/cm ³)	Immersion (risk/yr per pCi/L)
Uranium-233	7.18E-11	9.69E-11	1.50E-10	5.22E-11	2.83E-08	S	7.12E-10	9.39E-07	2.09E-15
Uranium-234	7.07E-11	9.55E-11	1.48E-10	5.11E-11	2.78E-08	S	2.54E-10	5.13E-07	1.17E-15
Uranium-235	6.96E-11	9.44E-11	1.48E-10	4.92E-11	2.50E-08	S	5.52E-07	6.32E-04	1.39E-12
Uranium-235+E	7.18E-11	9.77E-11	1.54E-10	5.00E-11	2.50E-08	S	5.76E-07	6.72E-04	1.48E-12
Uranium-236	6.66E-11	8.99E-11	1.39E-10	4.81E-11	2.57E-08	S	1.24E-10	3.06E-07	7.01E-16
Uranium-238	6.40E-11	8.66E-11	1.34E-10	4.66E-11	2.36E-08	S	1.24E-10	2.62E-07	5.99E-16
Uranium-238+E	8.70E-11	1.21E-10	1.97E-10	5.62E-11	2.37E-08	S	1.19E-07	1.27E-04	2.69E-13

^a Uranium-234 (analyzed as uranium-233/234), uranium-235 (analyzed as uranium-235/236) and uranium-238 are the COPCs quantitatively evaluated in the HHRA.

^b CSFs are from ORNL's technical memorandum entitled "*Calculation of Slope Factors and Dose Coefficients*" (ORNL2014). "+E" Indicates that risk contributions from 1,000-year decay chain progenies are included in the CSF.

^c "S" Indicates slow absorption into the bloodstream.

Table D-12-2. Dose Conversion Factors - Ingestion, Inhalation, and External Radiation

Radionuclide ^{a,b}	Ingestion (mrem/pCi)	Inhalation (risk/pCi)	Inhalation, Type ^c	External Radiation		
				Soil Volume (risk/yr per pCi/g)	Submersion (Risk/yr per pCi/cm ³)	Immersion (risk/yr per pCi/L)
Uranium-233	1.89E-04	3.55E-02	S	9.19E-04	1.98E+00	4.39E-03
Uranium-234	1.83E-04	3.48E-02	S	3.46E-04	1.15E+00	2.62E-03
Uranium-235	1.73E-04	3.13E-02	S	7.01E-01	1.28E+03	2.82E+00
Uranium-235+E	1.74E-04	3.13E-02	S	7.32E-01	1.37E+03	3.01E+00
Uranium-236	1.72E-04	3.21E-02	S	1.76E-04	7.06E-01	1.62E-03
Uranium-238	1.65E-04	2.98E-02	S	1.71E-04	5.98E-01	1.37E-03
Uranium-238+E	1.77E-04	2.98E-02	S	1.62E-01	3.46E+02	6.37E-01

^a Uranium-234 (analyzed as uranium-233/234), uranium-235 (analyzed as uranium-235/236) and uranium-238 are the COPCs quantitatively evaluated in the HHRA.

^b DSFs are from ORNL's technical memorandum entitled "Calculation of Slope Factors and Dose Coefficients" (ORNL2014) and are specific to the adult age group. "+E" Indicates that dose contributions from 1,000-year decay chain progenies are included in the CSF (ORNL 2014).

^c "S" Indicates slow absorption into the bloodstream.

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ATTACHMENT D-13

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Table D-13-1. Noncancer Toxicity Data - Oral/Dermal

Chemical COPC	Chronic/ Subchronic	Oral RfD		Oral	Absorbed RfD for Dermal		Primary	Combined	Source(s)
	(1)	Value	Units	Absorption Efficiency for Dermal	(2)		Target	Uncertainty/ Modifying Factors	
					Value	Units	Organ(s)		
Arsenic	Chronic	3.00E-04	mg/kg-day	1	3.00E-04	mg/kg-day	Cardiovascular; Dermal	3/1	IRIS
Barium	Chronic	2.00E-01	mg/kg-day	0.07	1.40E-02	mg/kg-day	Neurological	300/1	IRIS
Cadmium (Diet)	Chronic	1.00E-04	mg/kg-day	0.025	2.50E-06	mg/kg-day	Urinary	3/NA	ATSDR
Cadmium (Water)	Chronic	1.00E-04	mg/kg-day	0.05	5.00E-06	mg/kg-day	Urinary	3/NA	ATSDR
Manganese (Diet)	Chronic	1.40E-01	mg/kg-day	1	1.40E-01	mg/kg-day	Neurological	1/1	IRIS
Manganese (Non-diet)	Chronic	2.40E-02	mg/kg-day	0.04	9.60E-04	mg/kg-day	Neurological	1/3	RSL
Nitrate as Nitrogen	Chronic	1.60E+00	mg/kg-day	1	1.60E+00	mg/kg-day	Blood	1/1	IRIS
Selenium	Chronic	5.00E-03	mg/kg-day	1	5.00E-03	mg/kg-day	Selenosis/Whole Body	3/1	IRIS
Strontium	Chronic	6.00E-01	mg/kg-day	1	6.00E-01	mg/kg-day	Bone	300/1	IRIS
Thallium (Soluble Salts)	Chronic	1.00E-05	mg/kg-day	1	1.00E-05	mg/kg-day	Dermal	3000/NA	PPRTV
Uranium (Soluble Salts)	Chronic	2.00E-04	mg/kg-day	1	2.00E-04	mg/kg-day	Renal	300/NA	ATSDR
Fluoride	Chronic	4.00E-02	mg/kg-day	1	4.00E-02	mg/kg-day	Bones, Teeth, Skeletal Fluorosis	NA/NA	CalEPA
Arsenic	Subchronic	5.00E-03	mg/kg-day	1	3.00E-04	mg/kg-day	Dermal	10/NA	PPRTV
Barium	Subchronic	2.00E-01	mg/kg-day	0.07	1.00E-01	mg/kg-day	Renal	100/NA	ATSDR
Cadmium (Diet)	Subchronic	5.00E-04	mg/kg-day	0.025	1.25E-05	mg/kg-day	Musculoskeletal	100/NA	ATSDR
Cadmium (Water)	Subchronic	5.00E-04	mg/kg-day	0.05	2.50E-05	mg/kg-day	Musculoskeletal	100/NA	ATSDR
Manganese (Diet)	Subchronic	1.40E-01	mg/kg-day	0.04	5.60E-03	mg/kg-day	Neurological	1/3	HEAST
Manganese (Non-diet)	Subchronic	2.40E-02	mg/kg-day	0.04	9.60E-04	mg/kg-day	Neurological	1/3	Chronic Value
Nitrate as Nitrogen	Subchronic	4.00E+00	mg/kg-day	1	4.00E+00	mg/kg-day	Blood	1/NA	ATSDR
Selenium	Subchronic	5.00E-03	mg/kg-day	1	5.00E-03	mg/kg-day	Selenosis/Whole Body	3/NA	HEAST
Strontium	Subchronic	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	Bone	30/NA	ATSDR
Uranium	Subchronic	2.00E-04	mg/kg-day	1	2.00E-04	mg/kg-day	Renal	300/NA	ATSDR
Fluoride	Subchronic	4.00E-02	mg/kg-day	1	4.00E-02	mg/kg-day	Bones, Teeth, Skeletal Fluorosis	NA/NA	Chronic Value

Notes:

(1) Subchronic RfDo values are applied for calculating HQs for only the pond remediation worker scenario. In the HHRA, chronic values are used when subchronic values are unavailable.

(2) RfDo values are adjusted to reflect dermal absorption in accordance with "EPA's Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)" (USEPA 2004) by multiplying the RfDo by the GIABS. Values for GIABS are obtained from either EPA 2004, or from the most recent EPA RSL Tables (USEPA 2023a).

Sources/Acronyms:

ATSDR - Agency for Toxic Substances and Disease Registry. The following are reference citations for toxicological profiles for applicable COPCs:

Toxicological Profile for Barium (ATSDR 2007)

Toxicological Profile for Cadmium (ATSDR 2012a)

Toxicological Profile for Nitrate and Nitrite (ATSDR 2017)

Toxicological Profile for Strontium (ATSDR 2004)

Toxicological Profile for Uranium (ATSDR 2013)

CalEPA - CalEPA OEHHA Toxicity Criteria Database (CalEPA 2023). Available online at <https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary>.

HEAST - EPA's HEAST (USEPA 1997b)

IRIS - EPA's IRIS (EPA 2023d) available online at: <https://www.epa.gov/iris>.

NA - Not Available

PPRTV - The EPA's Provisional Peer-Reviewed Toxicity Values, as cited by Oak Ridge National Laboratory's online Risk Assessment Information System (<http://rais.ornl.gov/home/about.html>). Accessed May 2023 (ORNL 2023).

RSL - EPA's RSL from online table (<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>) (USEPA 2023a).

Table D-13-2. Noncancer Toxicity Data - Inhalation

Chemical COPC	Chronic/ Subchronic (1)	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ ~ Factors	Source(s)
		Value	Units			
Arsenic	Chronic	1.50E-05	mg/m ³	Development; Cardiovascular; CNS	NA/NA	CalEPA
Barium	Chronic	5.00E-04	mg/m ³	Fetus	1000/NA	HEAST
Cadmium (Diet)	Chronic	1.00E-05	mg/m ³	Renal	3/NA	ATSDR
Cadmium (Water)	Chronic	1.00E-05	mg/m ³	Renal	3/NA	ATSDR
Manganese (Diet)	Chronic	5.00E-05	mg/m ³	Nervous	1000/1	IRIS
Manganese (Non-diet)	Chronic	5.00E-05	mg/m ³	Nervous	1000/1	IRIS
Nitrate as Nitrogen	Chronic	NA	mg/m ³	NA	NA/NA	NA
Selenium	Chronic	2.00E-02	mg/m ³	NA	NA/NA	CalEPA
Strontium	Chronic	NA	mg/m ³	NA	NA/NA	NA
Thallium (Soluble Salts)	Chronic	NA	NA	NA	NA/NA	NA
Uranium (Soluble Salts)	Chronic	4.00E-05	mg/m ³	Renal	100/NA	ATSDR
Fluoride	Chronic	1.30E-02	mg/m ³	NA	NA/NA	CalEPA
Arsenic	Subchronic	1.50E-05	mg/m ³	Development; Cardiovascular; CNS	NA/NA	Chronic Value
Barium	Subchronic	5.00E-03	mg/m ³	Fetus	100/NA	HEAST
Cadmium (Diet)	Subchronic	9.00E-04	mg/m ³	Kidney	NA/NA	PPRTV
Cadmium (Water)	Subchronic	1.00E-05	mg/m ³	Renal	3/NA	Chronic Value
Manganese (Diet)	Subchronic	5.00E-05	mg/m ³	Nervous	1000/1	IRIS
Manganese (Non-diet)	Subchronic	5.00E-05	mg/m ³	Nervous	1000/1	Chronic Value
Nitrate as Nitrogen	Subchronic	NA	mg/m ³	NA	NA/NA	NA
Selenium	Subchronic	2.00E-02	mg/m ³	NA	NA/NA	Chronic Value
Strontium	Subchronic	NA	mg/m ³	NA	NA/NA	NA
Thallium (Soluble Salts)	Subchronic	NA	NA	NA	NA/NA	NA
Uranium (Soluble Salts)	Subchronic	1.00E-04	mg/m ³	Renal	300/NA	ATSDR
Fluoride	Subchronic	1.30E-02	mg/m ³	NA	NA/NA	Chronic Value

Notes:

(1) Subchronic RfC values are applied for calculating HQs for only the construction worker scenario. In the HHRA, chronic values are used when subchronic values are unavailable.

Sources/Acronyms:

ATSDR - Agency for Toxic Substances and Disease Registry. The following are reference citations for toxicological profiles for applicable COPCs:

Toxicological Profile for Cadmium (ATSDR 2012a)

Toxicological Profile for Uranium (ATSDR 2013)

CalEPA - CalEPA OEHHA Toxicity Criteria Database (CalEPA 2023). Available online at <https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary>.

HEAST - USEPA's HEAST (USEPA 1997b)

IRIS - USEPA's IRIS (USEPA 2023d) available online at <https://www.epa.gov/iris>.

NA - Not Available.

PPRTV - The USEPA's Provisional Peer-Reviewed Toxicity Values, as cited by Oak Ridge National Laboratory's online Risk Assessment Information System (<http://rais.ornl.gov/home/about.html>). Accessed May 2023 (ORNL 2023).

Table D-13-3. Cancer Toxicity Data - Oral/Dermal

Chemical COPC	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Source(s)
	Value	Units		Value	Units		
Arsenic	1.50E+00	(mg/kg-day) ⁻¹	1	1.50E+00	(mg/kg-day) ⁻¹	A	IRIS
Barium	NA	NA	NA	NA	NA	NA	NA
Cadmium (Diet)	NA	NA	NA	NA	NA	NA	NA
Cadmium (Water)	NA	NA	NA	NA	NA	NA	NA
Manganese (Diet)	NA	NA	NA	NA	NA	NA	NA
Manganese (Non-diet)	NA	NA	NA	NA	NA	NA	NA
Nitrate as Nitrogen	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA
Strontium	NA	NA	NA	NA	NA	NA	NA
Thallium (Soluble Salts)	NA	NA	NA	NA	NA	NA	NA
Uranium (Soluble Salts)	NA	NA	NA	NA	NA	NA	NA
Fluoride	NA	NA	NA	NA	NA	NA	NA

Notes:

(1) CSFo values are adjusted to reflect dermal absorption in accordance with "EPA's Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)" (USEPA 2004) by dividing the CSFo by the GIABS. Values for GIABS are obtained from either USEPA 2004, or from the most recent USEPA RSL Tables (USEPA 2023a).

(2) This chemical operates with a mutagenic mode of action (USEPA 2005) and would exhibit a greater effect in early-life versus later-life exposure. Chemical-specific toxicity data are not available for childhood and early-life exposures; thus, USEPA default age-dependent adjustment factors (ADAF) will be applied to the slope factor as follows:

Weight of Evidence definitions (USEPA 1986):

Group A chemicals (known human carcinogens) are agents for which there is sufficient evidence to support the causal association between exposure to the agents in humans and cancer.

Sources/Acronyms:

IRIS - USEPA's IRIS (USEPA 2023d) available online at <https://www.epa.gov/iris>.

NA - Not available

Table D-13-4. Cancer Toxicity - Inhalation

Chemical COPC	Inhalation Unit Risk		Weight of Evidence/ Cancer Guideline Description	Source(s)
	Value	Units		
Arsenic	4.30E-03	($\mu\text{g}/\text{m}^3$) ⁻¹	A	IRIS
Barium	NA	NA	NA	NA
Cadmium (Diet)	1.80E-03	($\mu\text{g}/\text{m}^3$) ⁻¹	B1	IRIS
Cadmium (Water)	1.80E-03	($\mu\text{g}/\text{m}^3$) ⁻¹	B1	IRIS
Manganese (Diet)	NA	NA	NA	NA
Manganese (Non-diet)	NA	NA	NA	NA
Nitrate as Nitrogen	NA	NA	NA	NA
Selenium	NA	NA	NA	NA
Strontium	NA	NA	NA	NA
Thallium (Soluble Salts)	NA	NA	NA	NA
Uranium (Soluble Salts)	NA	NA	NA	NA
Fluoride	NA	NA	NA	NA

Weight of Evidence definitions (USEPA 1986):

Group A chemicals (known human carcinogens) are agents for which there is sufficient evidence to support the causal association between exposure to the agents in humans and cancer.

humans.

Sources/Acronyms:

IRIS - USEPA's IRIS (USEPA 2023d) available online at <https://www.epa.gov/iris>.

NA - Not Available.

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ATTACHMENT D-14

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1 (15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1 (16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1 (17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1 (18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1 (19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1 (20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1 (21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1 (22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1 (23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1 (24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1 (25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1 (26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1 (27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1 (28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1 (29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1 (30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1 (31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1 (32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1 (33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1 (34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1 (35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2 (1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2 (3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2 (4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2 (5)
B-1	U-234		3.479E-02	3.479E-02	DCF2 (6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2 (7)
B-1	U-238		2.973E-02	2.973E-02	DCF2 (8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2 (9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3 (1)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3 (3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3 (4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3 (5)
D-1	U-234	1.831E-04	1.831E-04	DCF3 (6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3 (7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See EFTG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	4.452E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.000E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	not used	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	1.485E+01	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	9.550E-01	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	1.308E+01	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	not used	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	not used	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	not used	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	not used	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	not used	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	not used	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	not used	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	not used	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	not used	1.000E-03	---	VWT

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Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	not used	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	not used	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	not used	1	---	NS

R015	Unsat. zone 1, thickness (m)	not used	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	not used	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	not used	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	not used	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	not used	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	not used	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	not used	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.766E-03	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

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Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	not used	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	not used	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.572E-04		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	not used	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	not used	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.081E-03		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	not used	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	not used	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.264E-06		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	1.055E+04	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	1.600E-08	1.000E-04	---		MLINH
R017	Exposure duration	1.000E+00	3.000E+01	---		ED
R017	Shielding factor, inhalation	1.000E+00	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	1.000E+00	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	1.140E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	1.140E-01	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | not used | 8.000E-02 | --- | TE(3)
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 Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1
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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	suppressed
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	44515.00 square meters	U-234	1.485E+01
Thickness:	1.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
 TDOSE(t): 6.655E-01 6.645E-01 6.625E-01 6.555E-01 6.362E-01 5.734E-01 4.293E-01 0.000E+00
 M(t): 2.662E-02 2.658E-02 2.650E-02 2.622E-02 2.545E-02 2.294E-02 1.717E-02 0.000E+00
 0Maximum TDOSE(t): 6.655E-01 mrem/yr at t = 0.000E+00 years
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 Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.168E-03	0.0018	3.098E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.262E-02	0.0340
U-235	1.551E-01	0.2331	1.794E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.382E-03	0.0021
U-238	4.658E-01	0.7000	2.334E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.931E-02	0.0290
Total	6.221E-01	0.9349	5.611E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.331E-02	0.0651

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.379E-02	0.0357
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.565E-01	0.2352
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.852E-01	0.7290
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.655E-01	1.0000

0*Sum of all water independent and dependent pathways.

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 Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.167E-03	0.0018	3.093E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.258E-02	0.0340
U-235	1.549E-01	0.2331	1.792E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-03	0.0021

U-238	4.651E-01	0.7000	2.330E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.928E-02	0.0290
Total	6.212E-01	0.9349	5.603E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.325E-02	0.0651

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.375E-02	0.0357
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.563E-01	0.2352
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.844E-01	0.7290
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.645E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 14

Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.164E-03	0.0018	3.085E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.252E-02	0.0340
U-235	1.544E-01	0.2331	1.789E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.377E-03	0.0021
U-238	4.637E-01	0.7000	2.323E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.923E-02	0.0290
Total	6.193E-01	0.9349	5.587E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.312E-02	0.0651

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.368E-02	0.0358
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.558E-01	0.2352
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.830E-01	0.7290
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.625E-01	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

		Water Independent Pathways (Inhalation excludes radon)													
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
U-234	1.158E-03	0.0018	3.054E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.229E-02	0.0340	
U-235	1.528E-01	0.2332	1.778E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.365E-03	0.0021	
U-238	4.588E-01	0.7000	2.299E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.902E-02	0.0290	
Total	6.128E-01	0.9349	5.531E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.268E-02	0.0651	

		Water Dependent Pathways													
		Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-		mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide															
U-234		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.345E-02	0.0358
U-235		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.542E-01	0.2352
U-238		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.779E-01	0.7290
Total		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.555E-01	1.0000

File : C:\RESRAD FAMILY\ONSITE\7.2\USERFILES\SITE WKR SHIPROCK EVAP POND ALT1.RAD

		Water Independent Pathways (Inhalation excludes radon)													
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
U-234	1.178E-03	0.0019	2.969E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.164E-02	0.0340	
U-235	1.484E-01	0.2332	1.752E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.332E-03	0.0021	
U-238	4.452E-01	0.6998	2.230E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.846E-02	0.0290	
Total	5.947E-01	0.9349	5.375E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.143E-02	0.0651	

[illegible]

U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.282E-02	0.0359
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.497E-01	0.2353
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.636E-01	0.7288
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.362E-01	1.0000

0*Sum of all water independent and dependent pathways.
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 17
 Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
 Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.625E-03	0.0028	2.691E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.953E-02	0.0341
U-235	1.340E-01	0.2336	1.676E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.229E-03	0.0021
U-238	4.005E-01	0.6984	2.007E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.661E-02	0.0290
Total	5.360E-01	0.9348	4.865E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.737E-02	0.0652

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
 Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.116E-02	0.0369
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.352E-01	0.2358
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.171E-01	0.7273
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.734E-01	1.0000

0*Sum of all water independent and dependent pathways.
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 18
 Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years
 Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	5.283E-03	0.0123	2.041E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.468E-02	0.0342
U-235	1.002E-01	0.2333	1.461E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.779E-04	0.0023

U-238	2.959E-01	0.6893	1.484E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.228E-02	0.0286
Total	4.014E-01	0.9349	3.671E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.794E-02	0.0651

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.997E-02	0.0465
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.012E-01	0.2356
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.082E-01	0.7179
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.293E-01	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 19

Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

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Summary : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	1.602E-03	1.599E-03	1.595E-03	1.578E-03	1.531E-03	1.377E-03	1.017E-03	0.000E+00
	U-234	Th-230	1.000E+00	3.143E-08	9.421E-08	2.195E-07	6.550E-07	1.874E-06	5.859E-06	1.515E-05	0.000E+00
	U-234	Ra-226+D	1.000E+00	1.523E-09	1.065E-08	5.619E-08	4.991E-07	4.124E-06	4.174E-05	3.063E-04	0.000E+00
	U-234	Pb-210+D	1.000E+00	3.110E-13	4.630E-12	5.313E-11	1.328E-09	2.765E-08	6.143E-07	6.563E-06	0.000E+00
	U-234	ΣDSR(j)		1.602E-03	1.600E-03	1.595E-03	1.579E-03	1.537E-03	1.425E-03	1.345E-03	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	1.639E-01	1.637E-01	1.632E-01	1.614E-01	1.566E-01	1.409E-01	1.041E-01	0.000E+00
	U-235+D	Pa-231	1.000E+00	5.318E-07	1.593E-06	3.707E-06	1.100E-05	3.100E-05	9.182E-05	2.025E-04	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	5.229E-08	3.620E-07	1.867E-06	1.531E-05	1.023E-04	5.752E-04	1.595E-03	0.000E+00
	U-235+D	ΣDSR(j)		1.639E-01	1.637E-01	1.632E-01	1.615E-01	1.568E-01	1.416E-01	1.059E-01	0.000E+00
0U	U-238	U-238	5.450E-07	7.688E-10	7.676E-10	7.653E-10	7.573E-10	7.347E-10	6.609E-10	4.884E-10	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	3.709E-02	3.704E-02	3.692E-02	3.653E-02	3.545E-02	3.189E-02	2.356E-02	0.000E+00
	U-238+D	U-234	1.000E+00	2.261E-09	6.773E-09	1.576E-08	4.678E-08	1.318E-07	3.907E-07	8.630E-07	0.000E+00
	U-238+D	Th-230	1.000E+00	2.957E-14	2.068E-13	1.091E-12	9.691E-12	8.008E-11	8.104E-10	5.947E-09	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	1.075E-15	1.611E-14	1.875E-13	4.933E-12	1.180E-10	3.898E-09	8.327E-08	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	1.758E-19	5.415E-18	1.345E-16	1.001E-14	6.195E-13	4.821E-11	1.638E-09	0.000E+00
	U-238+D	ΣDSR(j)		3.709E-02	3.704E-02	3.692E-02	3.653E-02	3.545E-02	3.189E-02	2.356E-02	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.561E+04	1.563E+04	1.567E+04	1.583E+04	1.627E+04	1.755E+04	1.859E+04	*6.222E+09	
U-235	1.525E+02	1.528E+02	1.532E+02	1.548E+02	1.595E+02	1.766E+02	2.360E+02	*2.160E+06	
U-238	6.740E+02	6.750E+02	6.771E+02	6.843E+02	7.053E+02	7.840E+02	1.061E+03	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	1.485E+01	840 ± 2	1.896E-03	1.319E+04	1.602E-03	1.561E+04
U-235	9.550E-01	0.000E+00	1.639E-01	1.525E+02	1.639E-01	1.525E+02
U-238	1.308E+01	0.000E+00	3.709E-02	6.740E+02	3.709E-02	6.740E+02

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Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00	2.379E-02	2.375E-02	2.368E-02	2.343E-02	2.273E-02	2.044E-02	1.510E-02	0.000E+00
U-234	U-238	1.000E+00	2.957E-08	8.860E-08	2.061E-07	6.118E-07	1.724E-06	5.110E-06	1.129E-05	0.000E+00
U-234	ΣDOSE(j)		2.379E-02	2.375E-02	2.368E-02	2.343E-02	2.273E-02	2.045E-02	1.511E-02	0.000E+00
0Th-230	U-234	1.000E+00	4.667E-07	1.399E-06	3.260E-06	9.727E-06	2.783E-05	8.701E-05	2.250E-04	0.000E+00
Th-230	U-238	1.000E+00	3.868E-13	2.705E-12	1.427E-11	1.268E-10	1.047E-09	1.060E-08	7.779E-08	0.000E+00
Th-230	ΣDOSE(j)		4.667E-07	1.399E-06	3.260E-06	9.727E-06	2.783E-05	8.702E-05	2.251E-04	0.000E+00
0Ra-226	U-234	1.000E+00	2.261E-08	1.582E-07	8.344E-07	7.412E-06	6.125E-05	6.198E-04	4.548E-03	0.000E+00
Ra-226	U-238	1.000E+00	1.406E-14	2.107E-13	2.452E-12	6.453E-11	1.543E-09	5.098E-08	1.089E-06	0.000E+00
Ra-226	ΣDOSE(j)		2.261E-08	1.582E-07	8.344E-07	7.412E-06	6.125E-05	6.198E-04	4.549E-03	0.000E+00
0Pb-210	U-234	1.000E+00	4.618E-12	6.875E-11	7.889E-10	1.972E-08	4.106E-07	9.122E-06	9.746E-05	0.000E+00
Pb-210	U-238	1.000E+00	2.299E-18	7.083E-17	1.760E-15	1.309E-13	8.102E-12	6.306E-10	2.143E-08	0.000E+00
Pb-210	ΣDOSE(j)		4.618E-12	6.875E-11	7.889E-10	1.972E-08	4.106E-07	9.123E-06	9.748E-05	0.000E+00
0U-235	U-235	1.000E+00	1.565E-01	1.563E-01	1.558E-01	1.542E-01	1.496E-01	1.346E-01	9.944E-02	0.000E+00
0Pa-231	U-235	1.000E+00	5.079E-07	1.522E-06	3.540E-06	1.051E-05	2.960E-05	8.769E-05	1.933E-04	0.000E+00
0Ac-227	U-235	1.000E+00	4.994E-08	3.457E-07	1.783E-06	1.463E-05	9.774E-05	5.493E-04	1.523E-03	0.000E+00
0U-238	U-238	5.450E-07	1.006E-08	1.004E-08	1.001E-08	9.905E-09	9.610E-09	8.645E-09	6.388E-09	0.000E+00
U-238	U-238	1.000E+00	4.852E-01	4.844E-01	4.830E-01	4.779E-01	4.636E-01	4.171E-01	3.082E-01	0.000E+00
U-238	ΣDOSE(j)		4.852E-01	4.844E-01	4.830E-01	4.779E-01	4.636E-01	4.171E-01	3.082E-01	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

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Summary : Site Wkr at Shiprock GW Evap. Pond Alternative 1

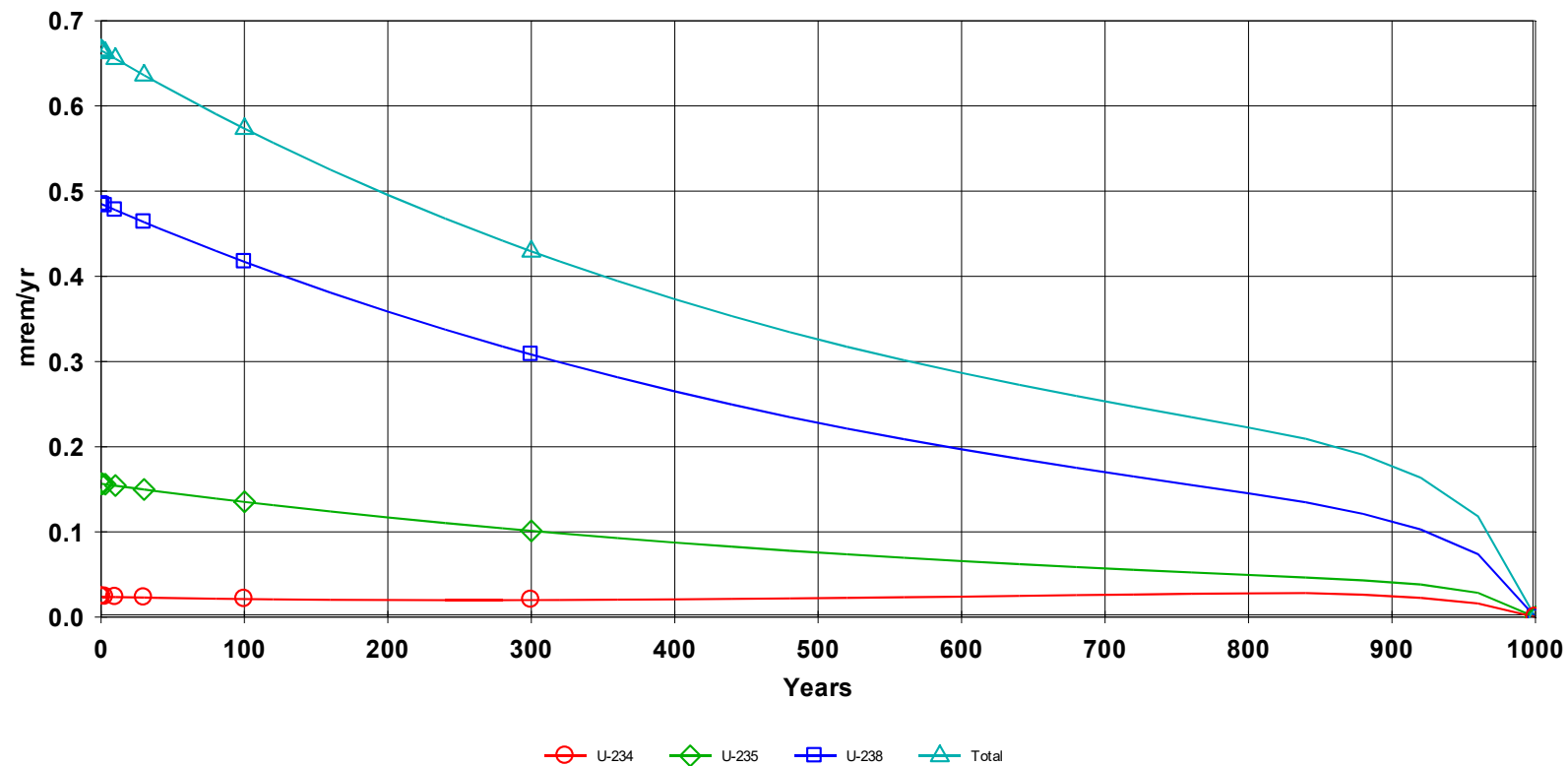
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Individual Nuclide Soil Concentration Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00	1.485E+01	1.483E+01	1.478E+01	1.463E+01	1.419E+01	1.276E+01	9.426E+00	3.264E+00
U-234	U-238	1.000E+00	0.000E+00	3.687E-05	1.103E-04	3.638E-04	1.059E-03	3.174E-03	7.035E-03	8.128E-03
U-234	ΣS(j):		1.485E+01	1.483E+01	1.478E+01	1.463E+01	1.419E+01	1.277E+01	9.433E+00	3.272E+00
0Th-230	U-234	1.000E+00	0.000E+00	1.364E-04	4.087E-04	1.355E-03	4.004E-03	1.266E-02	3.286E-02	6.986E-02
Th-230	U-238	1.000E+00	0.000E+00	1.696E-10	1.524E-09	1.681E-08	1.482E-07	1.535E-06	1.134E-05	6.592E-05
Th-230	ΣS(j):		0.000E+00	1.364E-04	4.087E-04	1.355E-03	4.004E-03	1.267E-02	3.287E-02	6.993E-02
0Ra-226	U-234	1.000E+00	0.000E+00	2.955E-08	2.654E-07	2.928E-06	2.582E-05	2.674E-04	1.976E-03	1.148E-02
Ra-226	U-238	1.000E+00	0.000E+00	2.449E-14	6.598E-13	2.424E-11	6.398E-10	2.189E-08	4.724E-07	8.226E-06
Ra-226	ΣS(j):		0.000E+00	2.955E-08	2.654E-07	2.928E-06	2.583E-05	2.675E-04	1.976E-03	1.148E-02
0Pb-210	U-234	1.000E+00	0.000E+00	3.052E-10	8.097E-09	2.825E-07	6.491E-06	1.492E-04	1.608E-03	1.081E-02
Pb-210	U-238	1.000E+00	0.000E+00	1.900E-16	1.517E-14	1.781E-12	1.259E-10	1.026E-08	3.529E-07	7.548E-06
Pb-210	ΣS(j):		0.000E+00	3.052E-10	8.097E-09	2.825E-07	6.491E-06	1.492E-04	1.608E-03	1.081E-02
0U-235	U-235	1.000E+00	9.550E-01	9.536E-01	9.507E-01	9.407E-01	9.126E-01	8.210E-01	6.067E-01	2.105E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.018E-05	6.034E-05	1.990E-04	5.791E-04	1.735E-03	3.839E-03	4.407E-03

0Ac-227	U-235	1.000E+00	0.000E+00	3.175E-07	2.786E-06	2.837E-05	2.022E-04	1.161E-03	3.235E-03	3.996E-03
0U-238	U-238	5.450E-07	7.129E-06	7.118E-06	7.096E-06	7.022E-06	6.812E-06	6.128E-06	4.529E-06	1.571E-06
U-238	U-238	1.000E+00	1.308E+01	1.306E+01	1.302E+01	1.288E+01	1.250E+01	1.124E+01	8.309E+00	2.883E+00
U-238	ΣS(j):		1.308E+01	1.306E+01	1.302E+01	1.288E+01	1.250E+01	1.124E+01	8.309E+00	2.883E+00

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 9.58 seconds

DOSE: All Nuclides Summed, All Pathways Summed



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Part III: Intake Quantities and Health Risk Factors

Cancer Risk Slope Factors	2
Risk Slope and ETFG for the Ground Pathway	4
Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	5
Time= 1.000E+00	8
Time= 3.000E+00	11
Time= 1.000E+01	14
Time= 3.000E+01	17
Time= 1.000E+02	20
Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

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Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

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Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1

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Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	2.237E-01	2.237E-01	2.237E-01	2.237E-01	2.237E-01	2.237E-01	2.237E-01	0.000E+00
At-218	2.740E-11	2.190E-01	2.190E-01	2.190E-01	2.190E-01	2.190E-01	2.190E-01	2.190E-01	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	0.000E+00
Bi-211	1.900E-07	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	0.000E+00
Bi-214	7.340E-06	2.190E-01	2.190E-01	2.190E-01	2.190E-01	2.190E-01	2.190E-01	2.190E-01	0.000E+00
Bi-215	1.080E-06	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	2.203E-01	0.000E+00
Fr-223	1.350E-07	2.211E-01	2.211E-01	2.211E-01	2.211E-01	2.211E-01	2.211E-01	2.211E-01	0.000E+00
Hg-206	4.830E-07	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	0.000E+00
Pa-231	1.270E-07	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	0.000E+00
Pa-234	6.620E-06	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Pa-234m	9.060E-08	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Pb-210	1.480E-09	2.280E-01	2.280E-01	2.280E-01	2.280E-01	2.280E-01	2.280E-01	2.280E-01	0.000E+00
Pb-211	2.910E-07	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Pb-214	9.940E-07	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	0.000E+00
Po-210	4.510E-11	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Po-211	3.760E-08	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	0.000E+00
Po-214	3.850E-10	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	0.000E+00
Po-215	7.480E-10	2.195E-01	2.195E-01	2.195E-01	2.195E-01	2.195E-01	2.195E-01	2.195E-01	0.000E+00
Po-218	6.840E-15	2.239E-01	2.239E-01	2.239E-01	2.239E-01	2.239E-01	2.239E-01	2.239E-01	0.000E+00
Ra-223	4.550E-07	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	0.000E+00
Ra-226	2.500E-08	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	0.000E+00
Rn-218	3.390E-09	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	2.184E-01	0.000E+00
Rn-219	2.350E-07	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	2.212E-01	0.000E+00
Rn-222	1.690E-09	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Th-227	4.450E-07	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	0.000E+00
Th-230	8.450E-10	2.233E-01	2.233E-01	2.233E-01	2.233E-01	2.233E-01	2.233E-01	2.233E-01	0.000E+00
Th-231	2.490E-08	2.280E-01	2.280E-01	2.280E-01	2.280E-01	2.280E-01	2.280E-01	2.280E-01	0.000E+00
Th-234	1.780E-08	2.239E-01	2.239E-01	2.239E-01	2.239E-01	2.239E-01	2.239E-01	2.239E-01	0.000E+00
Tl-206	6.110E-09	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Tl-207	1.590E-08	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
Tl-210	1.340E-05	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	2.189E-01	0.000E+00
U-234	2.530E-10	2.278E-01	2.278E-01	2.278E-01	2.278E-01	2.278E-01	2.278E-01	2.278E-01	0.000E+00
U-235	5.510E-07	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	2.215E-01	0.000E+00
U-238	1.240E-10	2.233E-01	2.233E-01	2.233E-01	2.233E-01	2.233E-01	2.233E-01	2.233E-01	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
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Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio-Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	8.910E-05	0.000E+00	0.000E+00	0.000E+00	1.236E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.236E+02
U-235	5.730E-06	0.000E+00	0.000E+00	0.000E+00	7.948E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.948E+00
U-238	7.848E-05	0.000E+00	0.000E+00	0.000E+00	1.089E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.089E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio-Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.819E-14	0.0000	1.359E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.778E-16	0.0000
Pa-231	2.835E-13	0.0000	4.615E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.896E-14	0.0000
Pb-210	7.317E-20	0.0000	1.413E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.189E-18	0.0000
Ra-226	1.807E-14	0.0000	1.668E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.222E-17	0.0000
Th-230	1.288E-14	0.0000	1.395E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.764E-14	0.0000
U-234	8.552E-10	0.0017	2.477E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-08	0.0240
U-235	1.219E-07	0.2485	1.432E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.747E-10	0.0016
U-238	3.420E-07	0.6974	1.856E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.311E-08	0.0267

Total 4.647E-07 0.9476 4.476E-12 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 2.567E-08 0.0523
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 6
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.877E-14	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.025E-13	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.262E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E-14	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.053E-14	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.264E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.227E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.551E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.904E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	8.552E-10	0.0017	2.477E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-08	0.0240

U-235	1.219E-07	0.2485	1.432E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.748E-10	0.0016
U-238	3.420E-07	0.6974	1.856E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.311E-08	0.0267
Total	4.647E-07	0.9476	4.476E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-08	0.0523

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 7
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.264E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.227E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.551E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.904E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 8
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.905E-12	0.000E+00	0.000E+00	0.000E+00	2.643E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.643E-06
Pa-231	1.211E-10	0.000E+00	0.000E+00	0.000E+00	1.679E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.679E-04
Pb-210	1.831E-15	0.000E+00	0.000E+00	0.000E+00	2.540E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.540E-09
Ra-226	1.773E-13	0.000E+00	0.000E+00	0.000E+00	2.459E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.459E-07
Th-230	8.187E-10	0.000E+00	0.000E+00	0.000E+00	1.136E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.136E-03
U-234	8.897E-05	0.000E+00	0.000E+00	0.000E+00	1.234E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.234E+02
U-235	5.721E-06	0.000E+00	0.000E+00	0.000E+00	7.936E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.936E+00
U-238	7.836E-05	0.000E+00	0.000E+00	0.000E+00	1.087E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.087E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	2.644E-13	0.0000	9.407E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.000E-15	0.0000				
Pa-231	8.494E-13	0.0000	1.383E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.679E-14	0.0000				
Pb-210	1.089E-18	0.0000	2.105E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.259E-17	0.0000				
Ra-226	1.264E-13	0.0000	1.167E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.953E-16	0.0000				
Th-230	3.860E-14	0.0000	4.182E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.028E-13	0.0000				
U-234	8.539E-10	0.0017	2.473E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.177E-08	0.0240				
U-235	1.217E-07	0.2485	1.430E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.736E-10	0.0016				
U-238	3.415E-07	0.6974	1.854E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.309E-08	0.0267				
Total	4.640E-07	0.9476	4.470E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.563E-08	0.0523				

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.684E-13	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.062E-13	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.368E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.267E-13	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.414E-13	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.263E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.546E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.897E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	8.540E-10	0.0017	2.473E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.177E-08	0.0240
U-235	1.217E-07	0.2485	1.430E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.736E-10	0.0016
U-238	3.415E-07	0.6974	1.854E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.309E-08	0.0267
Total	4.640E-07	0.9476	4.470E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.563E-08	0.0523

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 10

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.263E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.225E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.546E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.897E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 11

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio-Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.672E-11	0.000E+00	0.000E+00	0.000E+00	2.318E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.318E-05
Pa-231	3.621E-10	0.000E+00	0.000E+00	0.000E+00	5.022E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.022E-04
Pb-210	4.859E-14	0.000E+00	0.000E+00	0.000E+00	6.739E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.739E-08
Ra-226	1.592E-12	0.000E+00	0.000E+00	0.000E+00	2.209E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.209E-06
Th-230	2.452E-09	0.000E+00	0.000E+00	0.000E+00	3.401E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.401E-03
U-234	8.870E-05	0.000E+00	0.000E+00	0.000E+00	1.230E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.230E+02
U-235	5.704E-06	0.000E+00	0.000E+00	0.000E+00	7.912E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.912E+00
U-238	7.813E-05	0.000E+00	0.000E+00	0.000E+00	1.084E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.084E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio-Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.364E-12	0.0000	4.851E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.063E-14	0.0000
Pa-231	1.976E-12	0.0000	3.217E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.321E-13	0.0000
Pb-210	1.250E-17	0.0000	2.415E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.740E-16	0.0000
Ra-226	6.666E-13	0.0000	6.155E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.558E-15	0.0000
Th-230	8.994E-14	0.0000	9.744E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.724E-13	0.0000
U-234	8.513E-10	0.0017	2.466E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.173E-08	0.0240
U-235	1.213E-07	0.2485	1.426E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.712E-10	0.0016
U-238	3.405E-07	0.6974	1.848E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.305E-08	0.0267

Total 4.626E-07 0.9476 4.456E-12 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 2.555E-08 0.0523
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 12
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.384E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.108E-12	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.865E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.681E-13	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.625E-13	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.259E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.221E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.535E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.882E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	8.520E-10	0.0017	2.466E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.173E-08	0.0240

U-235	1.213E-07	0.2485	1.426E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.714E-10	0.0016
U-238	3.405E-07	0.6974	1.848E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.305E-08	0.0267
Total	4.626E-07	0.9476	4.456E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.555E-08	0.0523

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 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.259E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.221E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.535E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.882E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 14
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.702E-10	0.000E+00	0.000E+00	0.000E+00	2.361E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.361E-04
Pa-231	1.194E-09	0.000E+00	0.000E+00	0.000E+00	1.656E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.656E-03
Pb-210	1.695E-12	0.000E+00	0.000E+00	0.000E+00	2.351E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.351E-06
Ra-226	1.757E-11	0.000E+00	0.000E+00	0.000E+00	2.437E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.437E-05
Th-230	8.131E-09	0.000E+00	0.000E+00	0.000E+00	1.128E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.128E-02
U-234	8.776E-05	0.000E+00	0.000E+00	0.000E+00	1.217E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.217E+02
U-235	5.644E-06	0.000E+00	0.000E+00	0.000E+00	7.828E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.828E+00
U-238	7.730E-05	0.000E+00	0.000E+00	0.000E+00	1.072E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.072E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.119E-11	0.0000	3.979E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.692E-13	0.0000				
Pa-231	5.865E-12	0.0000	9.548E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.922E-13	0.0000				
Pb-210	3.125E-16	0.0000	6.036E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.349E-15	0.0000				
Ra-226	5.921E-12	0.0000	5.467E-19	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.384E-14	0.0000				
Th-230	2.684E-13	0.0000	2.908E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.410E-12	0.0000				
U-234	8.423E-10	0.0017	2.440E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.161E-08	0.0240				
U-235	1.201E-07	0.2485	1.411E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.631E-10	0.0016				
U-238	3.369E-07	0.6973	1.828E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.291E-08	0.0267				
Total	4.578E-07	0.9476	4.410E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.529E-08	0.0523				

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	8.485E-10	0.0018	2.440E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.161E-08	0.0240
U-235	1.201E-07	0.2486	1.412E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.637E-10	0.0016
U-238	3.369E-07	0.6973	1.829E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.291E-08	0.0267
Total	4.578E-07	0.9476	4.410E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.529E-08	0.0523

1RESRAD-ONSITE, Version 7.2

T½ Limit = 180 days

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Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.246E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.208E-07	0.2501
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.498E-07	0.7241
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.831E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2

T½ Limit = 180 days

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Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio-Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.213E-09	0.000E+00	0.000E+00	0.000E+00	1.683E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.683E-03
Pa-231	3.475E-09	0.000E+00	0.000E+00	0.000E+00	4.819E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.819E-03
Pb-210	3.895E-11	0.000E+00	0.000E+00	0.000E+00	5.402E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.402E-05
Ra-226	1.550E-10	0.000E+00	0.000E+00	0.000E+00	2.149E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.149E-04
Th-230	2.403E-08	0.000E+00	0.000E+00	0.000E+00	3.332E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.332E-02
U-234	8.515E-05	0.000E+00	0.000E+00	0.000E+00	1.181E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.181E+02
U-235	5.476E-06	0.000E+00	0.000E+00	0.000E+00	7.595E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.595E+00
U-238	7.500E-05	0.000E+00	0.000E+00	0.000E+00	1.040E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.040E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

0

Radio-Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	7.475E-11	0.0002	2.659E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.131E-12	0.0000
Pa-231	1.653E-11	0.0000	2.690E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.105E-12	0.0000
Pb-210	6.507E-15	0.0000	1.257E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.947E-13	0.0000
Ra-226	4.893E-11	0.0001	4.518E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.143E-13	0.0000
Th-230	7.679E-13	0.0000	8.319E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.034E-12	0.0000
U-234	8.172E-10	0.0017	2.367E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.126E-08	0.0240
U-235	1.165E-07	0.2485	1.369E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.404E-10	0.0016
U-238	3.268E-07	0.6971	1.774E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	0.0267

Total 4.443E-07 0.9477 4.279E-12 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 2.454E-08 0.0523
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 18
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.588E-11	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.763E-11	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.012E-13	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.905E-11	0.0001
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.802E-12	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.208E-08	0.0258
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.172E-07	0.2500
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.394E-07	0.7239
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.688E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	8.669E-10	0.0018	2.368E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-08	0.0240

U-235	1.166E-07	0.2487	1.374E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.426E-10	0.0016
U-238	3.268E-07	0.6971	1.774E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-08	0.0267
Total	4.443E-07	0.9477	4.279E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.454E-08	0.0523

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 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.214E-08	0.0259
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.173E-07	0.2502
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.394E-07	0.7239
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.688E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 20
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	6.967E-09	0.000E+00	0.000E+00	0.000E+00	9.663E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.663E-03
Pa-231	1.041E-08	0.000E+00	0.000E+00	0.000E+00	1.444E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.444E-02
Pb-210	8.951E-10	0.000E+00	0.000E+00	0.000E+00	1.241E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.241E-03
Ra-226	1.605E-09	0.000E+00	0.000E+00	0.000E+00	2.226E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.226E-03
Th-230	7.600E-08	0.000E+00	0.000E+00	0.000E+00	1.054E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.054E-01
U-234	7.659E-05	0.000E+00	0.000E+00	0.000E+00	1.062E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.062E+02
U-235	4.926E-06	0.000E+00	0.000E+00	0.000E+00	6.832E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.832E+00
U-238	6.747E-05	0.000E+00	0.000E+00	0.000E+00	9.357E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.357E+01

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.201E-10	0.0010	1.495E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.356E-12	0.0000
Pa-231	4.895E-11	0.0001	7.968E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.273E-12	0.0000
Pb-210	1.446E-13	0.0000	2.792E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.325E-12	0.0000
Ra-226	4.952E-10	0.0012	4.572E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.157E-12	0.0000
Th-230	2.401E-12	0.0000	2.601E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.261E-11	0.0000
U-234	7.351E-10	0.0017	2.129E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.013E-08	0.0240
U-235	1.048E-07	0.2480	1.231E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.660E-10	0.0016
U-238	2.940E-07	0.6957	1.596E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-08	0.0267
Total	4.005E-07	0.9477	3.853E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.209E-08	0.0523

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.264E-10	0.0010
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.222E-11	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.469E-12	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.963E-10	0.0012
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.502E-11	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.087E-08	0.0257
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.054E-07	0.2495
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.053E-07	0.7224
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.226E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.233E-09	0.0029	2.131E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.015E-08	0.0240
U-235	1.052E-07	0.2491	1.254E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.756E-10	0.0016
U-238	2.940E-07	0.6957	1.596E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-08	0.0267
Total	4.005E-07	0.9477	3.853E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.209E-08	0.0523

1RESRAD-ONSITE, Version 7.2

T½ Limit = 180 days

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Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.138E-08	0.0269
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.059E-07	0.2507
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.053E-07	0.7224
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.226E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2

T½ Limit = 180 days

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Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.941E-08	0.000E+00	0.000E+00	0.000E+00	2.693E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.693E-02
Pa-231	2.303E-08	0.000E+00	0.000E+00	0.000E+00	3.195E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.195E-02
Pb-210	9.649E-09	0.000E+00	0.000E+00	0.000E+00	1.338E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.338E-02
Ra-226	1.186E-08	0.000E+00	0.000E+00	0.000E+00	1.644E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.644E-02
Th-230	1.973E-07	0.000E+00	0.000E+00	0.000E+00	2.736E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.736E-01
U-234	5.660E-05	0.000E+00	0.000E+00	0.000E+00	7.850E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.850E+01
U-235	3.640E-06	0.000E+00	0.000E+00	0.000E+00	5.049E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.049E+00
U-238	4.986E-05	0.000E+00	0.000E+00	0.000E+00	6.915E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.915E+01

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.165E-09	0.0037	4.144E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.762E-11	0.0001
Pa-231	1.079E-10	0.0003	1.757E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.217E-12	0.0000
Pb-210	1.545E-12	0.0000	2.984E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.621E-11	0.0001
Ra-226	3.634E-09	0.0115	3.356E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.492E-12	0.0000
Th-230	6.212E-12	0.0000	6.729E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.263E-11	0.0001
U-234	5.432E-10	0.0017	1.573E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.487E-09	0.0237
U-235	7.743E-08	0.2446	9.098E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.922E-10	0.0016
U-238	2.173E-07	0.6863	1.179E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.327E-09	0.0263

Total 3.002E-07 0.9481 2.857E-12 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 1.642E-08 0.0519
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 24
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SITE WKR_SHIPROCK EVAP POND_ALT1.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-09	0.0037
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.151E-10	0.0004
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.776E-11	0.0002
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.643E-09	0.0115
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.885E-11	0.0001
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.032E-09	0.0254
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.792E-08	0.2461
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.256E-07	0.7126
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.166E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+02 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	4.184E-09	0.0132	1.580E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.569E-09	0.0239

U-235	7.871E-08	0.2486	9.688E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.170E-10	0.0016
U-238	2.173E-07	0.6863	1.180E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.332E-09	0.0263
Total	3.002E-07	0.9481	2.857E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.642E-08	0.0519

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 25
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.175E-08	0.0371
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.922E-08	0.2502
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.256E-07	0.7126
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.166E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 26
 Intrisk : Site Wkr at Shiprock GW Evap. Pond_Alternative 1
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

[illegible]

0

0

0

[illegible]

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/27/2023 18:39 Page 28

Intrisk : Site Wkr at Shiprock GW Evap. Pond Alternative 1

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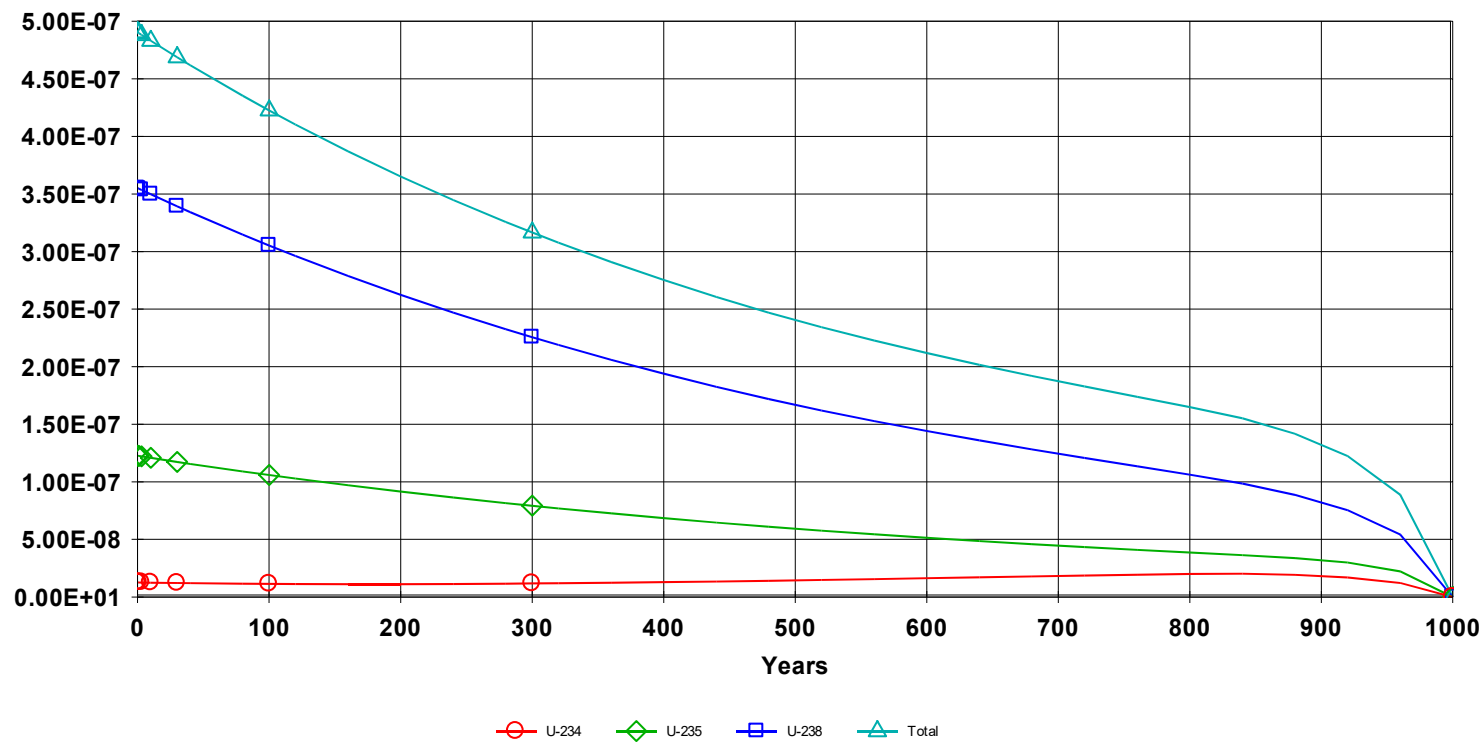
Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

EXCESS CANCER RISK: All Nuclides Summed, All Pathways Summed



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Attachment D-14-2a. Onsite Worker Sediment Calculation Inputs, Chemical Risk, Alternative 1

[/HTML"Output to XLS](/tmp/Composite_Worker_chem_raisk_risk_27MAR2023_risk3578042.xlsx)

[/HTML"Output to PDF</div>](/tmp/Composite_Worker_chem_raisk_risk_27MAR2023_risk3578042.pdf)

Variable	Composite Worker Soil Default Value	Site-Specific Value
A (PEF Dispersion Constant)	16.2302	16.2302
A (VF Dispersion Constant)	11.911	11.911
A (VF Dispersion Constant - mass limit)	11.911	11.911
B (PEF Dispersion Constant)	18.7762	18.7762
B (VF Dispersion Constant)	18.4385	18.4385
B (VF Dispersion Constant - mass limit)	18.4385	18.4385
City (PEF Climate Zone) Selection	Default	Phoenix, AZ (3)
City (VF Climate Zone) Selection	Default	Phoenix, AZ (3)
C (PEF Dispersion Constant)	216.108	216.108
C (VF Dispersion Constant)	209.7845	209.7845
C (VF Dispersion Constant - mass limit)	209.7845	209.7845
foc (fraction organic carbon in soil) g/g	0.006	0.006
F(x) (function dependent on U_p/U_t) unitless	0.194	0.003765285
n (total soil porosity) $L_{\text{pore}}/L_{\text{soil}}$	0.43396	0.43396
p_b (dry soil bulk density) g/cm ³	1.5	1.5
p_b (dry soil bulk density - mass limit) g/cm ³	1.5	1.5
PEF (particulate emission factor) m ³ /kg	1359344438	62443921311
p_s (soil particle density) g/cm ³	2.65	2.65
Q/C _{wind} (g/m ² -s per kg/m ³)	93.77	56.15669819
Q/C _{vol} (g/m ² -s per kg/m ³)	68.18	68.18
Q/C _{vol} (g/m ² -s per kg/m ³ - mass limit)	68.18	68.18
A _s (PEF acres)	0.5	11
A _s (VF acres)	0.5	0.5
A _s (VF mass-limit acres)	0.5	0.5
AF _{com} (skin adherence factor - composite worker) mg/cm ²	0.12	0.12
AT _{com} (averaging time - composite worker)	365	365
BW _{com} (body weight - composite worker)	80	80
ED _{com} (exposure duration - composite worker) yr	25	25
EF _{com} (exposure frequency - composite worker) day/yr	250	250
ET _{com} (exposure time - composite worker) hr	8	8
IRS _{com} (soil ingestion rate - composite worker) mg/day	100	100
LT (lifetime) yr	70	70
SA _{com} (surface area - composite worker) cm ² /day	3527	3527
T _w (groundwater temperature) Celsius	25	25
Theta _a (air-filled soil porosity) $L_{\text{air}}/L_{\text{soil}}$	0.28396	0.28396
Theta _w (water-filled soil porosity) $L_{\text{water}}/L_{\text{soil}}$	0.15	0.15
T (exposure interval) s	819936000	819936000
T (exposure interval) yr	26	26
U _m (mean annual wind speed) m/s	4.69	3.26
U _t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0
VF _{ml} (volitization factor - mass limit) m ³ /kg		0

Attachment D-14-2b. Onsite Worker Sediment Exposures, Chemical Risk, Alternative 1

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	RfC (mg/m ³)	RfC Ref	SF _o (mg/kg-day) ⁻¹	SF _o Ref	IUR (ug/m ³) ⁻¹	IUR Ref	ABS _{gi}	ABS _{derm}	Volatilization Factor Unlimited Reservoir (m ³ /kg)	Volatilization Factor Mass Limit (m ³ /kg)	Volatilization Factor Selected (m ³ /kg)	DA	Particulate Emission Factor (m ³ /kg)	Soil Saturation Concentration (mg/kg)	HLC (atm-m ³ /mole)	Henry's Law Constant (unitless)	H` and HLC Ref
Manganese (Non-diet)	7439-96-5	No	No	2.40E-02	S	5.00E-05	IC	-		-		4.00E-02	-	-	-	-	-	6.24E+10	-	-	-	
Uranium (Soluble Salts)	7440-61-1	No	No	2.00E-04	AF	4.00E-05	AF	-		-		1.00E+00	-	-	-	-	-	6.24E+10	-	-	-	
Risk/HL				-		-		-		-		-	-	-	-	-	-	-	-	-	-	

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

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Table continued

Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T _C (K)	T _C Ref	D _{ia} (cm ² /s)	D _{hw} (cm ² /s)	Soil Concentration (mg/kg)	Ingestion Noncarcinogenic CDI (mg/kg-day)	Dermal Noncarcinogenic CDI (mg/kg-day)	Inhalation Noncarcinogenic CDI (mg/m ³)	Ingestion Carcinogenic CDI (mg/kg-day)	Dermal Carcinogenic CDI (mg/kg-day)	Inhalation Carcinogenic CDI (ug/m ³)	Ingestion HQ	Dermal HQ	Inhalation HQ	Total HI	Ingestion Risk	Dermal Risk	Inhalation Risk	Total Risk
-	2.37E+03	PHYSPROP	4.33E+03	CRC	-	-	1.63E+02	1.39E-04	-	5.95E-10	4.97E-05	-	2.12E-07	5.80E-03	-	1.19E-05	5.81E-03	-	-	-	-
-	4.09E+03	CRC	1.37E+04	YAWS	-	-	3.90E+01	3.34E-05	-	1.42E-10	1.19E-05	-	5.09E-08	1.67E-01	-	3.56E-06	1.67E-01	-	-	-	-
-	-		-		-	-	-	-	-	-	-	-	-	1.73E-01	-	1.55E-05	1.73E-01	-	-	-	-

Attachment D-14-3a. Onsite Trespasser Sediment Calculation Inputs, Chemical Risk, Alternative 1

[Output to XLS](/tmp/Recreator_chem_raisk_risk_27MAR2023_risk3611401.xlsx)

[Output to PDF](/tmp/Recreator_chem_raisk_risk_27MAR2023_risk3611401.pdf)

Variable	Recreator Soil/Sediment Default Value	Site-Specific Value
A (PEF Dispersion Constant)	16.2302	10.2871
A (VF Dispersion Constant)	11.911	11.911
A (VF Dispersion Constant - mass limit)	11.911	11.911
B (PEF Dispersion Constant)	18.7762	18.7124
B (VF Dispersion Constant)	18.4385	18.4385
B (VF Dispersion Constant - mass limit)	18.4385	18.4385
City (PEF Climate Zone) Selection	Default	Phoenix, AZ (3)
City (VF Climate Zone) Selection	Default	Default
C (PEF Dispersion Constant)	216.108	212.2704
C (VF Dispersion Constant)	209.7845	209.7845
C (VF Dispersion Constant - mass limit)	209.7845	209.7845
foc (fraction organic carbon in soil) g/g	0.006	0.006
F(x) (function dependent on U_m/U_t) unitless	0.194	0.003765285
n (total soil porosity) $L_{\text{pore}}/L_{\text{soil}}$	0.43396	0.43396
p_b (dry soil bulk density) g/cm ³	1.5	1.5
p_b (dry soil bulk density - mass limit) g/cm ³	1.5	1.5
PEF (particulate emission factor) n ³ /kg	1359344438	40080922341
p_s (soil particle density) g/cm ³	2.65	2.65
Q/C_{wind} (g/m ² -s per kg/m ³)	93.77	36.04533815
Q/C_{vol} (g/m ² -s per kg/m ³)	68.18	68.18
Q/C_{vol} (g/m ² -s per kg/m ³ - mass limit)	68.18	68.18
A_s (PEF acres)	0.5	11
A_s (VF acres)	0.5	0.5
A_s (VF mass-limit acres)	0.5	0.5
AF_{0-2} (skin adherence factor) mg/cm ²	0.2	0
AF_{2-6} (skin adherence factor) mg/cm ²	0.2	0
AF_{6-16} (skin adherence factor) mg/cm ²	0.07	0.07
AF_{16-30} (skin adherence factor) mg/cm ²	0.07	0.07
$AF_{\text{rec-a}}$ (skin adherence factor - adult) mg/cm ²	0.07	0.07
$AF_{\text{rec-c}}$ (skin adherence factor - child) mg/cm ²	0.2	0
AT_{rec} (averaging time)	365	365
BW_{0-2} (body weight) kg	15	0
BW_{2-6} (body weight) kg	15	0
BW_{6-16} (body weight) kg	80	80
BW_{16-30} (body weight) kg	80	80
$BW_{\text{rec-a}}$ (body weight - adult) kg	80	80
$BW_{\text{rec-c}}$ (body weight - child) kg	15	0
$DFS_{\text{rec-adj}}$ (age-adjusted soil dermal factor) mg/kg	22155	3958.5

DFSM _{rec-adj} (mutagenic age-adjusted soil dermal factor) mg/kg	91770	7917
ED _{rec} (exposure duration - recreator) years	26	10
ED ₀₋₂ (exposure duration) year	2	0
ED ₂₋₆ (exposure duration) year	4	0
ED ₆₋₁₆ (exposure duration) year	10	5
ED ₁₆₋₃₀ (exposure duration) year	10	5
ED _{rec-c} (exposure duration - child) years	6	0
EF _{rec} (exposure frequency) days/year	75	75
EF ₀₋₂ (exposure frequency) days/year	75	0
EF ₂₋₆ (exposure frequency) days/year	75	0
EF ₆₋₁₆ (exposure frequency) days/year	75	75
EF ₁₆₋₃₀ (exposure frequency) days/year	75	75
EF _{rec-a} (exposure frequency - adult) days/year	75	75
EF _{rec-c} (exposure frequency - child) days/year	75	0
ET _{rec} (exposure time - recreator) hours/day	1	1
ET ₀₋₂ (exposure time) hours/day	1	0
ET ₂₋₆ (exposure time) hours/day	1	0
ET ₆₋₁₆ (exposure time) hours/day	1	1
ET ₁₆₋₃₀ (exposure time) hours/day	1	1
ET _{rec-a} (adult exposure time) hours/day	1	1
ET _{rec-c} (child exposure time) hours/day	1	0
IFS _{rec-adj} (age-adjusted soil ingestion factor) mg/kg	7875	937.5
IFSM _{rec-adj} (mutagenic age-adjusted soil ingestion factor) mg/kg	35750	1875
IRS ₀₋₂ (soil intake rate) mg/day	200	0
IRS ₂₋₆ (soil intake rate) mg/day	200	0
IRS ₆₋₁₆ (soil intake rate) mg/day	100	100
IRS ₁₆₋₃₀ (soil intake rate) mg/day	100	100
IRS _{rec-a} (soil intake rate - adult) mg/day	100	100
IRS _{rec-c} (soil intake rate - child) mg/day	200	0
LT (lifetime - recreator) years	70	70
SA ₀₋₂ (skin surface area) cm ² /day	2373	0
SA ₂₋₆ (skin surface area) cm ² /day	2373	0
SA ₆₋₁₆ (skin surface area) cm ² /day	6032	6032
SA ₁₆₋₃₀ (skin surface area) cm ² /day	6032	6032
SA _{rec-a} (skin surface area - adult) cm ² /day	6032	6032
SA _{rec-c} (skin surface area - child) cm ² /day	2373	0
T _w (groundwater temperature) Celsius	25	25
Theta _a (air-filled soil porosity) L _{air} /L _{soil}	0.28396	0.28396
Theta _w (water-filled soil porosity) L _{water} /L _{soil}	0.15	0.15
T (exposure interval) s	819936000	819936000
T (exposure interval) yr	26	26
U _m (mean annual wind speed) m/s	4.69	3.26
U _t (equivalent threshold value)	11.32	11.32
V (fraction of vegetative cover) unitless	0.5	0
VF _{ml} (volitization factor - mass limit) m ³ /kg		0

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Table continued

Child Dermal HQ	Child Inhalation HQ	Child Total HI	Adult Ingestion HQ	Adult Dermal HQ	Adult Inhalation HQ	Adult Total HI	Adjusted Ingestion HQ	Adjusted Dermal HQ	Adjusted Inhalation HQ	Adjusted Total HI	Ingestion Risk	Dermal Risk	Inhalation Risk	Total Risk
-	-	-	5.00E-02	-	2.08E-07	5.00E-02	5.00E-02	-	2.08E-07	5.00E-02	-	-	-	-
-	-	-	5.00E-02	-	2.08E-07	5.00E-02	5.00E-02	-	2.08E-07	5.00E-02	-	-	-	-

Attachment D-14-4a. Onsite Trespasser Surface Water Calculation Inputs, Radiological Risk, Alternative 1

Variable	Recreator Surface Water Default Value	Site-Specific Value
$DFA_{rec-adj}$ (age-adjusted immersion factor - recreator) hr	1170	750
ED_{rec} (exposure duration - recreator) yr	26	20
ED_{rec-a} (exposure duration - recreator adult) yr	20	10
ED_{rec-c} (exposure duration - recreator child) yr	6	10
EF_{rec-a} (exposure frequency - recreator adult) day/yr	45	75
EF_{rec-c} (exposure frequency - recreator child) day/yr	45	0
$ET_{event-rec-a}$ (exposure time - recreator adult) hr/event	1	1
$ET_{event-rec-c}$ (exposure time - recreator child) hr/event	1	0
EV_{rec-a} (number of bathing events per day - recreator adult) event/day	1	1
EV_{rec-c} (number of bathing events per day - recreator child) event/day	1	0
$IFW_{rec-adj}$ (age-adjusted water intake rate - recreator) L	131.4	82.5
IRW_{rec-a} (water intake rate - recreator adult) L/hr	0.11	0.11
IRW_{rec-c} (water intake rate - recreator child) L/hr	0.12	0

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Attachment D-14-4b. Onsite Trespasser Surface Exposures, Radiological Risk, Alternative 1

Isotope	ICRP Lung Absorption Type	Water Ingestion Slope Factor (risk/pCi)	Immersion Slope Factor (risk/yr per pCi/L)	Concentration (pCi/L)	Ingestion CDI (pCi)	Immersion CDI (pCi-year/L)	Ingestion Risk	Immersion Risk	Total Tapwater Risk
U-234	S	7.07E-11	1.17E-15	2.46E+03	2.03E+05	2.11E+02	1.43E-05	2.46E-13	1.43E-05
U-235+D	S	7.18E-11	1.48E-12	1.63E+02	1.34E+04	1.40E+01	9.65E-07	2.07E-11	9.65E-07
U-238+D	S	8.70E-11	2.69E-13	2.20E+03	1.82E+05	1.88E+02	1.58E-05	5.06E-11	1.58E-05
*Total Risk/HI		-	-	-	-	-	3.11E-05	7.15E-11	3.11E-05

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5a
Onsite Trespasser Surface Water Calculation Inputs, Radiological Dose, Alternative 1

Variable	Recreator Surface Water Default Value	Form-input Value
$CF_{rec-fowl}$ (fowl contaminated fraction) unitless:	1	0
$CF_{rec-game}$ (game contaminated fraction) unitless:	1	0
ED_{rec} (exposure duration - recreator) y		10
EF_{rec} (exposure frequency - recreator) day/y		0
f_{w-fowl} (fraction of animal's water from site when on-site) unitless	1	0
f_{w-game} (fraction of animal's water from site when on-site) unitless	1	0
$IRGF_{rec}$ (fowl consumption rate) g/day		0
$IRGL_{rec}$ (land game consumption rate) g/day		0
Q_{w-fowl} (fowl water intake rate) L/day		0
Q_{w-game} (land game water intake rate) L/day		0
t_{rec} (time - recreator) yr	1	1
AAF_{rec-a} (age adjustment factor - recreator adult) unitless:		1
AAF_{rec-c} (age adjustment factor - recreator child) unitless:		0
$DFA_{rec-adj}$ (age-adjusted immersion factor - recreator) h		75
DL (dose limit) mrem/yr	1	25
ED_{rec} (exposure duration - recreator) y		10
ED_{rec-a} (exposure duration - recreator adult) y		10
ED_{rec-c} (exposure duration - recreator child) y		0
EF_{rec-a} (exposure frequency - recreator adult) day/y		75
EF_{rec-c} (exposure frequency - recreator child) day/y		0
$ET_{event-rec-a}$ (exposure time - recreator adult) hr/event		1
$ET_{event-rec-c}$ (exposure time - recreator child) hr/event		0
EV_{rec-a} (number of bathing events per day - recreator adult) event/da		1
EV_{rec-c} (number of bathing events per day - recreator child) event/da		0
$IFW_{rec-adj}$ (age-adjusted water intake rate - recreator) l		8.25
IRW_{rec-a} (water intake rate - recreator adult) L/h	0.11	0.11
IRW_{rec-c} (water intake rate - recreator child) L/h	0.12	0

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5b
Onsite Trespasser Parent Dose and CDI at Time=T₀
Surface Water (no decay)

Isotope	ICRP Lung Absorption Type	Ingestion DCF (mrem/pCi)	Immersion DCF (mrem/yr per pCi/L)	Surface Water Concentration (pCi/L)	Ingestion CDI (pCi/year)	Immersion CDI (pCi/L)	Water to Game Consumption CDI (pCi/year)	Water to Fowl Consumption CDI (pCi/year)	Ingestion Dose (mrem/year)
U-234	S	2.15E-04	1.63E-06	2.46E+03	2.03E+04	2.11E+01	0.00E+00	0.00E+00	4.36E+00

Table continued

Immersion Dose (mrem/year)	Water to Game Consumption Dose (mrem/year)	Water to Fowl Consumption Dose (mrem/year)	Total Dose (mrem/year)
3.44E-05	0.00E+00	0.00E+00	4.36E+00

Attachment D-14-5c
Onsite Trespasser Peak Dose Start Times (by route)
Surface Water

Peak Dose Start Time Ingestion (yrs)	Peak Dose Start Time External Exposure Immersion (yrs)
9.99E+02	9.99E+02

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5d
Onsite Trespasser Peak Doses
Surface Water (complete chain decay)
Using the Peak Dose Time Intervals from DCC Calculations (by Route)

Isotope	Ingestion Concentration (pCi/L)	External Exposure Concentration Immersion (pCi/L)	Water-to-Game Ingestion Concentration (pCi/L)	Water-to-Fowl Ingestion Concentration (pCi/L)	Ingestion Dose (mrem/year)	Immersion Dose (mrem/year)	Water to Game Consumption Dose (mrem/year)	Water to Fowl Consumption Dose (mrem/year)	Total Dose (mrem/year)
U-234	2.45E+03	2.45E+03	-	-	4.35E+01	3.43E-04	-	-	4.35E+01
Th-230	2.25E+01	2.25E+01	-	-	1.74E+00	7.72E-06	-	-	1.74E+00
Ra-226	4.24E+00	4.24E+00	-	-	5.91E-01	2.92E-05	-	-	5.91E-01
Rn-222	4.24E+00	4.24E+00	-	-	0.00E+00	1.61E-06	-	-	1.61E-06
Po-218	4.24E+00	4.24E+00	-	-	0.00E+00	1.22E-10	-	-	1.22E-10
At-218	8.47E-04	8.47E-04	-	-	0.00E+00	1.07E-11	-	-	1.07E-11
Rn-218	8.47E-07	8.47E-07	-	-	0.00E+00	6.32E-13	-	-	6.32E-13
Pb-214	4.23E+00	4.23E+00	-	-	2.60E-04	1.03E-03	-	-	1.29E-03
Bi-214	4.24E+00	4.24E+00	-	-	1.94E-04	6.58E-03	-	-	6.78E-03
Po-214	4.23E+00	4.23E+00	-	-	0.00E+00	3.52E-07	-	-	3.52E-07
Tl-210	8.89E-04	8.89E-04	-	-	0.00E+00	2.56E-06	-	-	2.56E-06
Pb-210	3.99E+00	3.99E+00	-	-	1.25E+00	4.39E-06	-	-	1.25E+00
Bi-210	3.99E+00	3.99E+00	-	-	2.21E-03	1.20E-05	-	-	2.22E-03
Po-210	3.98E+00	3.98E+00	-	-	2.15E+00	3.88E-08	-	-	2.15E+00
Hg-206	7.58E-08	7.58E-08	-	-	0.00E+00	9.10E-12	-	-	9.10E-12
Tl-206	5.34E-06	5.34E-06	-	-	0.00E+00	2.56E-11	-	-	2.56E-11
Total Dose	-	-	-	-	4.92E+01	8.01E-03	-	-	4.93E+01

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5e
Onsite Trespasser Parent Dose and CDI at Time=T₀
Surface Water (no decay)

Isotope	ICRP Lung Absorption Type	Ingestion DCF (mrem/pCi)	Immersion DCF (mrem/yr per pCi/L)	Surface Water Concentration (pCi/L)	Ingestion CDI (pCi/year)	Immersion CDI (pCi/L)	Water to Game Consumption CDI (pCi/year)
U-235	S	2.03E-04	1.76E-03	1.63E+02	1.34E+03	1.40E+00	0.00E+00

Table continued

Water to Fowl Consumption CDI (pCi/year)	Ingestion Dose (mrem/year)	Immersion Dose (mrem/year)	Water to Game Consumption Dose (mrem/year)	Water to Fowl Consumption Dose (mrem/year)	Total Dose (mrem/year)
0.00E+00	2.73E-01	2.46E-03	0.00E+00	0.00E+00	2.76E-01

Attachment D-14-5f
Onsite Trespasser Peak Dose Start
Times (by route)
Surface Water

Peak Dose Start Time Ingestion (yrs)	Peak Dose Start Time External Exposure Immersion (yrs)
9.99E+02	9.99E+02

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5g
Onsite Trespasser Peak Doses
Surface Water (complete chain decay)
Using the Peak Dose Time Intervals from DCC Calculations (by Route)

Isotope	Ingestion Concentration (pCi/L)	External Exposure Concentration Immersion (pCi/L)	Water-to-Game Ingestion Concentration (pCi/L)	Water-to-Fowl Ingestion Concentration (pCi/L)	Ingestion Dose (mrem/year)	Immersion Dose (mrem/year)	Water to Game Consumption Dose (mrem/year)	Water to Fowl Consumption Dose (mrem/year)	Total Dose (mrem/year)
U-235	1.63E+02	1.63E+02	-	-	2.73E+00	2.46E-02	-	-	2.76E+00
Th-231	1.63E+02	1.63E+02	-	-	2.29E-02	1.66E-03	-	-	2.46E-02
Pa-231	3.41E+00	3.41E+00	-	-	5.84E-01	1.09E-04	-	-	5.85E-01
Ac-227	3.30E+00	3.30E+00	-	-	3.97E-01	2.74E-07	-	-	3.97E-01
Th-227	3.26E+00	3.26E+00	-	-	1.47E-02	3.76E-04	-	-	1.51E-02
Fr-223	4.56E-02	4.56E-02	-	-	4.52E-05	2.08E-06	-	-	4.72E-05
Ra-223	3.30E+00	3.30E+00	-	-	2.20E-01	4.21E-04	-	-	2.20E-01
At-219	2.73E-06	2.73E-06	-	-	0.00E+00	0.00E+00	-	-	0.00E+00
Rn-219	3.30E+00	3.30E+00	-	-	0.00E+00	1.86E-04	-	-	1.86E-04
Bi-215	2.65E-06	2.65E-06	-	-	0.00E+00	6.72E-10	-	-	6.72E-10
Po-215	3.30E+00	3.30E+00	-	-	0.00E+00	5.64E-07	-	-	5.64E-07
Pb-211	3.30E+00	3.30E+00	-	-	2.65E-04	2.22E-04	-	-	4.87E-04
Bi-211	3.30E+00	3.30E+00	-	-	0.00E+00	1.50E-04	-	-	1.50E-04
Po-211	9.11E-03	9.11E-03	-	-	0.00E+00	7.40E-08	-	-	7.40E-08
Tl-207	3.29E+00	3.29E+00	-	-	0.00E+00	2.15E-05	-	-	2.15E-05
Total Dose	-	-	-	-	3.97E+00	2.78E-02	-	-	4.00E+00

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5h
Onsite Trespasser Parent Dose and CDI at Time= T_0
Surface Water (no decay)

Isotope	ICRP Lung Absorption Type	Ingestion DCF (mrem/pCi)	Immersion DCF (mrem/yr per pCi/L)	Surface Water Concentration (pCi/L)	Ingestion CDI (pCi/year)	Immersion CDI (pCi/L)	Water to Game Consumption CDI (pCi/year)
U-238	S	1.94E-04	8.55E-07	2.20E+03	1.82E+04	1.88E+01	0.00E+00

Table continued

Water to Fowl Consumption CDI (pCi/year)	Ingestion Dose (mrem/year)	Immersion Dose (mrem/year)	Water to Game Consumption Dose (mrem/year)	Water to Fowl Consumption Dose (mrem/year)	Total Dose (mrem/year)
0.00E+00	3.52E+00	1.61E-05	0.00E+00	0.00E+00	3.52E+00

Attachment D-14-5i
Onsite Trespasser Peak Dose
Start Times (by route)
Surface Water

Peak Dose Start Time Ingestion (yrs)	Peak Dose Start Time External Exposure Immersion (yrs)
9.99E+02	9.99E+02

Site-Specific
Recreator Surface Water Inputs

Attachment D-14-5j
Onsite Trespasser Peak Doses
Surface Water (complete chain decay)
Using the Peak Dose Time Intervals from DCC Calculations (by Route)

Isotope	Ingestion Concentration (pCi/L)	External Exposure Concentration Immersion (pCi/L)	Water-to-Game Ingestion Concentration (pCi/L)	Water-to-Fowl Ingestion Concentration (pCi/L)	Ingestion Dose (mrem/year)	Immersion Dose (mrem/year)	Water to Game Consumption Dose (mrem/year)	Water to Fowl Consumption Dose (mrem/year)	Total Dose (mrem/year)
U-238	2.20E+03	2.20E+03	-	-	3.52E+01	1.61E-04	-	-	3.52E+01
Th-234	2.20E+03	2.20E+03	-	-	3.14E+00	1.59E-02	-	-	3.16E+00
Pa-234m	2.20E+03	2.20E+03	-	-	0.00E+00	5.39E-02	-	-	5.39E-02
Pa-234	3.52E+00	3.52E+00	-	-	5.97E-04	5.10E-03	-	-	5.70E-03
U-234	6.19E+00	6.19E+00	-	-	1.10E-01	8.71E-07	-	-	1.10E-01
Th-230	2.84E-02	2.84E-02	-	-	2.21E-03	9.80E-09	-	-	2.21E-03
Ra-226	3.69E-03	3.69E-03	-	-	5.17E-04	2.56E-08	-	-	5.17E-04
Rn-222	3.69E-03	3.69E-03	-	-	0.00E+00	1.41E-09	-	-	1.41E-09
Po-218	3.69E-03	3.69E-03	-	-	0.00E+00	1.07E-13	-	-	1.07E-13
At-218	7.38E-07	7.38E-07	-	-	0.00E+00	9.35E-15	-	-	9.35E-15
Rn-218	7.38E-10	7.38E-10	-	-	0.00E+00	5.53E-16	-	-	5.53E-16
Pb-214	3.69E-03	3.69E-03	-	-	2.27E-07	9.01E-07	-	-	1.13E-06
Bi-214	3.69E-03	3.69E-03	-	-	1.70E-07	5.76E-06	-	-	5.93E-06
Po-214	3.69E-03	3.69E-03	-	-	0.00E+00	3.08E-10	-	-	3.08E-10
Tl-210	7.74E-07	7.74E-07	-	-	0.00E+00	2.24E-09	-	-	2.24E-09
Pb-210	3.37E-03	3.37E-03	-	-	1.06E-03	3.72E-09	-	-	1.06E-03
Bi-210	3.37E-03	3.37E-03	-	-	1.88E-06	1.02E-08	-	-	1.89E-06
Po-210	3.36E-03	3.36E-03	-	-	1.82E-03	3.29E-11	-	-	1.82E-03
Hg-206	6.39E-11	6.39E-11	-	-	0.00E+00	7.72E-15	-	-	7.72E-15
Tl-206	4.51E-09	4.51E-09	-	-	0.00E+00	2.17E-14	-	-	2.17E-14
Total Dose	-	-	-	-	3.84E+01	7.50E-02	-	-	3.85E+01

Attachment D-14-6a. Onsite Trespasser Surface Water Inputs, Chemical Risk, Alternative 1

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Variable	Recreator Surface Water Default Value	Site- Specific Value
BW ₀₋₂ (body weight) kg	15	0
BW ₂₋₆ (body weight) kg	15	0
BW ₆₋₁₆ (body weight) kg	80	80
BW ₁₆₋₃₀ (body weight) kg	80	80
BW _a (body weight - adult) kg	80	80
BW _{rec-a} (body weight - adult) kg	80	80
DFW _{rec-adj} (age-adjusted dermal factor) cm ² -event/kg	335655	184237.5
DFWM _{rec-adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	1053210	368475
ED _{rec} (exposure duration - recreator) years	26	10
ED ₀₋₂ (exposure duration) years	2	0
ED ₂₋₆ (exposure duration) years	4	0
ED ₆₋₁₆ (exposure duration) years	10	5
ED ₁₆₋₃₀ (exposure duration) years	10	5
ED _{rec-a} (exposure duration - adult) years	20	10
EF _{rec-w} (exposure frequency) days/year	45	75
EF ₂₋₆ (exposure frequency) days/year	45	0
EF ₆₋₁₆ (exposure frequency) days/year	45	75
EF ₁₆₋₃₀ (exposure frequency) days/year	45	75
EF _{rec-a} (adult exposure frequency) days/year	45	75
ET ₀₋₂ (exposure time) hours/event	1	0
ET ₂₋₆ (exposure time) hours/event	1	0
ET ₆₋₁₆ (exposure time) hours/event	1	1
ET ₁₆₋₃₀ (exposure time) hours/event	1	1
ET _{event-rec-adj} (age-adjusted exposure time) hours/event	1	1
ET _{event-rec-madj} (mutagenic age-adjusted exposure time) hours/event	1	1
ET _{rec-a} (adult exposure time) hours/event	1	1
EV ₀₋₂ (events) events/day	1	0
EV ₂₋₆ (events) events/day	1	0
EV ₆₋₁₆ (events) events/day	1	1
EV ₁₆₋₃₀ (events) events/day	1	1
EV _{rec-a} (adult) events/day	1	1
IFW _{rec-adj} (age-adjusted water intake rate) L/kg	3.4	1.041
IFWM _{rec-adj} (mutagenic age-adjusted water intake rate) L/kg	14	2.205
IRW ₀₋₂ (water intake rate) L/hour	0.12	0
IRW ₂₋₆ (water intake rate) L/hour	0.12	0
IRW ₆₋₁₆ (water intake rate) L/hour	0.124	0.124
IRW ₁₆₋₃₀ (water intake rate) L/hour	0.0985	0.0985
IRW _{rec} (water intake rate - adult) L/day	0.11	0.111
IRW _{rec-a} (water intake rate - adult) L/hr	0.11	0.111
LT (lifetime - recreator) years	70	70
SA ₀₋₂ (skin surface area) cm ²	6365	0
SA ₂₋₆ (skin surface area) cm ²	6365	0
SA ₆₋₁₆ (skin surface area) cm ²	19652	19652
SA ₁₆₋₃₀ (skin surface area) cm ²	19652	19652
SA _{rec} (skin surface area - adult) cm ²	19652	19652
SA _{rec-a} (skin surface area - adult) cm ²	19652	19652
Apparent thickness of stratum corneum (cm)	0.001	0.001

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Attachment D-14-6b. Onsite Trespasser Surface Water Exposures, Chemical Risk, Alternative 1

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	SF _o (mg/kg-day) ⁻¹	SF _o Re f	ABS _{gi}	K _p (cm/hr)	FA	EPD	Carcinogenic Absorbed dose per event (ug/cm ² -event)	Noncancer-child Absorbed dose per event (ug/cm ² -event)	Noncancer-adult Absorbed dose per event (ug/cm ² -event)	Noncancer-adjusted Absorbed dose per event (ug/cm ² -event)	Surface Water Concentration (ug/L)	Child Ingestion Noncarcinogenic CDI (mg/kg-day)	Child Dermal Noncarcinogenic CDI (mg/kg-day)
Arsenic, Inorganic	7440-38-2	No	No	3.00E-04	IC	1.50E+00	IC	1.00E+00	1.00E-03	1.00E+00	1.00E+00	2.50E-04	0.00E+00	2.50E-04	2.50E-04	2.50E+02	-	-
Fluoride	16984-48-8	No	No	4.00E-02	C	-		1.00E+00	1.00E-03	1.00E+00	1.00E+00	2.42E-02	0.00E+00	2.42E-02	2.42E-02	2.42E+04	-	-
Manganese (Non- diet)	7439-96-5	No	No	2.40E-02	S	-		4.00E-02	1.00E-03	1.00E+00	1.00E+00	3.42E-03	0.00E+00	3.42E-03	3.42E-03	3.42E+03	-	-
Selenium	7782-49-2	No	No	5.00E-03	IC	-		1.00E+00	1.00E-03	1.00E+00	1.00E+00	1.22E-02	0.00E+00	1.22E-02	1.22E-02	1.22E+04	-	-
Thallium (Soluble Salts)	7440-28-0	No	No	1.00E-05	XC	-		1.00E+00	1.00E-03	1.00E+00	1.00E+00	3.82E-05	0.00E+00	3.82E-05	3.82E-05	3.82E+01	-	-
Uranium (Soluble Salts)	7440-61-1	No	No	2.00E-04	AF	-		1.00E+00	1.00E-03	1.00E+00	1.00E+00	1.59E-02	0.00E+00	1.59E-02	1.59E-02	1.59E+04	-	-
*Total Risk/HI				-		-		-	-	-	-	-	-	-	-	-	-	-

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

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Table continued

Adult Ingestion Noncarcinogenic CDI (mg/kg-day)	Adult Dermal Noncarcinogenic CDI (mg/kg-day)	Adjusted Ingestion Noncarcinogenic CDI (mg/kg-day)	Adjusted Dermal Noncarcinogenic CDI (mg/kg-day)	Ingestion Carcinogenic CDI (mg/kg-day)	Dermal Carcinogenic CDI (mg/kg-day)	Child Ingestion HQ	Child Dermal HQ	Child Total HI	Adult Ingestion HQ	Adult Dermal HQ	Adult Total HI	Adjusted Ingestion HQ	Adjusted Dermal HQ	Adjusted Total HI	Ingestion Risk	Dermal Risk	Total Risk
7.13E-05	1.26E-05	7.13E-05	1.26E-05	1.02E-05	1.80E-06	-	-	-	2.38E-01	4.21E-02	2.80E-01	2.38E-01	4.21E-02	2.80E-01	1.53E-05	2.70E-06	1.80E-05
6.90E-03	1.22E-03	6.90E-03	1.22E-03	9.86E-04	1.75E-04	-	-	-	1.72E-01	3.05E-02	2.03E-01	1.73E-01	3.05E-02	2.03E-01	-	-	-
9.74E-04	1.73E-04	9.75E-04	1.73E-04	1.39E-04	2.46E-05	-	-	-	4.06E-02	1.80E-01	2.20E-01	4.06E-02	1.80E-01	2.20E-01	-	-	-
3.48E-03	6.16E-04	3.48E-03	6.16E-04	4.97E-04	8.80E-05	-	-	-	6.96E-01	1.23E-01	8.19E-01	6.96E-01	1.23E-01	8.19E-01	-	-	-
1.09E-05	1.93E-06	1.09E-05	1.93E-06	1.56E-06	2.75E-07	-	-	-	1.09E+00	1.93E-01	1.28E+00	1.09E+00	1.93E-01	1.28E+00	-	-	-
4.53E-03	8.02E-04	4.53E-03	8.02E-04	6.47E-04	1.15E-04	-	-	-	2.26E+01	4.01E+00	2.66E+01	2.26E+01	4.01E+00	2.67E+01	-	-	-
-	-	-	-	-	-	-	-	-	2.49E+01	4.58E+00	2.94E+01	2.49E+01	4.58E+00	2.95E+01	1.53E-05	2.70E-06	1.80E-05

Attachment D-14-7a. Offsite Receptor Location R0, Resident Tap Water Inputs, Chemical Risk, Alternative 1

[Output to XLS](/tmp/Resident_chem_raisk_risk_20MAY2023_risk3476226.xlsx)

[Output to PDF](/tmp/Resident_chem_raisk_risk_20MAY2023_risk3476226.pdf)

Variable	Resident Tapwater Default Value	Site-Specific Value
BW ₀₋₂ (mutagenic body weight) kg	15	15
BW ₂₋₆ (mutagenic body weight) kg	15	15
BW ₆₋₁₆ (mutagenic body weight) kg	80	80
BW ₁₆₋₂₆ (mutagenic body weight) kg	80	80
BW _{res-a} (body weight - adult) kg	80	80
BW _{res-c} (body weight - child) kg	15	15
DFW _{res-adj} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{res-adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{res} (exposure duration - resident) year	26	26
ED ₀₋₂ (mutagenic exposure duration first phase) year	2	2
ED ₂₋₆ (mutagenic exposure duration second phase) year	4	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) year	10	10
ED ₁₆₋₂₆ (mutagenic exposure duration fourth phase) year	10	10
ED _{res-a} (exposure duration - adult) year	20	20
ED _{res-c} (exposure duration - child) year	6	6
EF _{res} (exposure frequency) days/yr	350	350
EF ₀₋₂ (mutagenic exposure frequency first phase) days/yr	350	350
EF ₂₋₆ (mutagenic exposure frequency second phase) days/yr	350	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/yr	350	350
EF ₁₆₋₂₆ (mutagenic exposure frequency fourth phase) days/yr	350	350
EF _{res-a} (exposure frequency - adult) days/yr	350	350
EF _{res-c} (exposure frequency - child) days/yr	350	350
ET _{res} (exposure time) hours/day	24	24
ET _{event-res-adj} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{event-res-madj} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET ₀₋₂ (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET ₂₋₆ (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET ₆₋₁₆ (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET ₁₆₋₂₆ (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71
ET _{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET _{res-c} (dermal exposure time - child) hours/event	0.54	0.54

ET ₀₋₂ (mutagenic inhalation exposure time first phase) hours/d	24	24
ET ₂₋₆ (mutagenic inhalation exposure time second phase) hours/d	24	24
ET ₆₋₁₆ (mutagenic inhalation exposure time third phase) hours/d	24	24
ET ₁₆₋₂₆ (mutagenic inhalation exposure time fourth phase) hours/d	24	24
ET _{res-a} (inhalation exposure time - adult) hours/d	24	24
ET _{res-c} (inhalation exposure time - child) hours/d	24	24
EV ₀₋₂ (mutagenic events) per day	1	1
EV ₂₋₆ (mutagenic events) per day	1	1
EV ₆₋₁₆ (mutagenic events) per day	1	1
EV ₁₆₋₂₆ (mutagenic events) per day	1	1
EV _{res-a} (events - adult) per day	1	1
EV _{res-c} (events - child) per day	1	1
IFW _{res-adj} (adjusted intake factor) L/kg	327.95	327.95
IFWM _{res-adj} (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW ₀₋₂ (mutagenic water intake rate) L/day	0.78	0.78
IRW ₂₋₆ (mutagenic water intake rate) L/day	0.78	0.78
IRW ₆₋₁₆ (mutagenic water intake rate) L/day	2.5	2.5
IRW ₁₆₋₂₆ (mutagenic water intake rate) L/day	2.5	2.5
IRW _{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW _{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m ³	0.5	0.5
LT (lifetime) years	70	70
SA ₀₋₂ (mutagenic skin surface area) cm ²	6365	6365
SA ₂₋₆ (mutagenic skin surface area) cm ²	6365	6365
SA ₆₋₁₆ (mutagenic skin surface area) cm ²	19652	19652
SA ₁₆₋₂₆ (mutagenic skin surface area) cm ²	19652	19652
SA _{res-a} (skin surface area - adult) cm ²	19652	19652
SA _{res-c} (skin surface area - child) cm ²	6365	6365
I _{sc} (apparent thickness of stratum corneum) cm	0.001	0.001

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Attachment D-14-7b. Resident Exposures to Groundwater Used as Tap Water at Offsite Receptor Location R0, Chemical Risk, Alternative 1

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	RfC (mg/m ³)	RfC Ref	SF _o (mg/kg-day) ⁻¹	SF _o R ef	IUR (ug/m ³) ⁻¹	IUR Ref	ABS _{gi}	K _p (cm/hr)	FA	In EPD?	Carcinogenic Absorbed dose per event (ug/cm ² -event)	Noncancer-child Absorbed dose per event (ug/cm ² -event)	Noncancer-adult Absorbed dose per event (ug/cm ² -event)	Noncancer-adjusted Absorbed dose per event (ug/cm ² -event)	Tap Water Concentration (ug/L)
Nitrate (measured as nitrogen)	14797-55-8	No	No	1.60E+00	IC	-		-		-		1.00E+00	1.00E-03	1.00E+00	Yes	1.40E-01	1.12E-01	1.48E-01	1.40E-01	2.08E+05
<i>*Total Risk/HI</i>																				

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

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Table continued

Child Ingestion Noncarcinogenic CDI (mg/kg-day)	Child Dermal Noncarcinogenic CDI (mg/kg-day)	Child Inhalation Noncarcinogenic CDI (mg/m ³)	Adult Ingestion Noncarcinogenic CDI (mg/kg-day)	Adult Dermal Noncarcinogenic CDI (mg/kg-day)	Adult Inhalation Noncarcinogenic CDI (mg/m ³)	Adjusted Ingestion Noncarcinogenic CDI (mg/kg-day)	Adjusted Dermal Noncarcinogenic CDI (mg/kg-day)	Adjusted Inhalation Noncarcinogenic CDI (mg/m ³)	Ingestion Carcinogenic CDI (mg/kg-day)	Dermal Carcinogenic CDI (mg/kg-day)
1.04E+01	4.57E-02	9.97E+01	6.23E+00	3.48E-02	9.97E+01	7.19E+00	3.84E-02	9.97E+01	2.67E+00	1.43E-02
-	-	-	-	-	-	-	-	-	-	-

Table continued

Inhalation Carcinogenic CDI (ug/m ³)	Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Total HI	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Total HI	Adjusted Ingestion HQ	Adjusted Inhalation HQ	Adjusted Dermal HQ	Adjusted Total HI	Ingestion Risk	Inhalation Risk	Dermal Risk	Total Risk
3.70E+04	6.48E+00	-	2.86E-02	6.51E+00	3.90E+00	-	2.17E-02	3.92E+00	4.49E+00	-	2.40E-02	4.52E+00	-	-	-	-
-	6.48E+00	-	2.86E-02	6.51E+00	3.90E+00	-	2.17E-02	3.92E+00	4.49E+00	-	2.40E-02	4.52E+00	-	-	-	-

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Dose Conversion Factor (and Related) Parameter Summary
 Current Library: DCFPAK3.02
 Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)

DCSF	Pa-234	(Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT (11)
DCSF	Pa-234m	(Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT (12)
DCSF	Pb-210	(Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT (13)
DCSF	Pb-211	(Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT (14)
DCSF	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT (15)
DCSF	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT (16)
DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:				
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/28/2023 12:34	Page 3	
Parent Dose Report					
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1					
File : SHIPROCK_ALT1_OFFSITE RESA.ROF					

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D		6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D		2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1		2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210		1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D		3.528E-02	3.528E-02	DCF2 (6)

DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)
DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)

TF					
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF					
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF					
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF					
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF					
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				

TF	Pa-231	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF					
TF	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF					
TF	Pb-210+D1	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF					
TF	Po-210	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF					
TF	Ra-226+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF					
TF	Th-230	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF					
TF	U-234	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF					
TF	U-235+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF					
TF	U-238	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF					
TF	U-238+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 6

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)

TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210, fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210, crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)
TF				
TF	Ra-226+D, fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D, crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230, fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230, crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234, fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D, fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238, fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D, fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)

VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (8)
VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)

DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)

DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)
DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)

DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach(1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBearing
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY(1)
LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-7.500E+01	3.438E+01	---	AGRIXY(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-4.370E+01	6.562E+01	---	AGRIXY(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	7.261E+02	2.340E+02	---	AGRIXY(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	7.581E+02	2.660E+02	---	AGRIXY(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-7.778E+01	3.438E+01	---	AGRIXY(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-4.648E+01	6.562E+01	---	AGRIXY(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	7.595E+02	2.680E+02	---	AGRIXY(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	7.915E+02	3.000E+02	---	AGRIXY(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-2.417E+02	0.000E+00	---	AGRIXY(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-1.417E+02	1.000E+02	---	AGRIXY(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	8.026E+02	4.500E+02	---	AGRIXY(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	9.026E+02	5.500E+02	---	AGRIXY(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-1.444E+02	0.000E+00	---	AGRIXY(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-4.440E+01	1.000E+02	---	AGRIXY(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	7.970E+02	3.000E+02	---	AGRIXY(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	8.970E+02	4.000E+02	---	AGRIXY(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-1.694E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.305E+02	6.562E+01	---	DWELLXY(2)

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File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	7.372E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	7.859E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)

TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T (2)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+00	3.000E+00	---	T (3)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+01	6.000E+00	---	T (4)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+01	1.200E+01	---	T (5)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+02	3.000E+01	---	T (6)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+02	7.500E+01	---	T (7)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+03	1.750E+02	---	T (8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T (9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T (10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	7.340E-07	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
	PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
	PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
	PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
	PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
	PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
	PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
	PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
	PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
	PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
	PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
	PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV

PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)

AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF (3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG (3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF (3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN (3)
AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB (3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY (3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP (3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG (3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC (3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF (3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO (4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT (4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN (4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF (4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG (4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF (4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN (4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB (4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY (4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP (4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG (4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC (4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF (4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHODWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name

AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX
AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,1)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ (4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ (4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ (5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ (5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ (6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ (1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ (1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ (1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ (1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ (1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ (2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ (2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ (2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ (2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ (2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ (3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ (3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ (3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,2)

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)

AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)

AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)

AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ (2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ (2,2,5)
AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ (2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ (2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ (2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ (3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ (3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ (3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ (3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ (4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ (4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ (5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ (5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ (6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,5)
AIRT	Joint Frequency in ESE Sector				

AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)
AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ (6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,6)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ (1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ (1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ (1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ (1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ (1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ (2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ (2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ (2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ (2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ (3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ (3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ (3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ (4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ (4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ (5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ (5,4,7)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)

AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,8)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ (5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ (1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ (1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ (1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ (1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ (1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ (2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ (2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ (2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ (2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ (2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ (3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ (3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ (3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ (3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
AIRT	Joint Frequency in S Sector				

AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)

AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)

AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)
AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)
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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				

AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)
AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)

AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)

AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)

AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,15)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				

AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ (5,4,16)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	5.569E+02	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	1.659E+02	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
0 = (total porosity + distribution coefficient*dry bulk density) / total porosity					

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H (1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ (1)

USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ (1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR(1)
WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACTCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)

LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI(1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI(1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI(2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI(2,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	7.340E-07	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	7.340E-07	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)

SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA (6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA (7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA (8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA (9)
SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA (10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA (11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA (12)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 35
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location A_Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	7.042E+01	1.325E+01	---	RAD_SHAPE (13)
SEXT	Outer annular radius (m), ring 14:	1.408E+02	2.650E+01	---	RAD_SHAPE (14)
SEXT	Outer annular radius (m), ring 15:	2.112E+02	3.975E+01	---	RAD_SHAPE (15)
SEXT	Outer annular radius (m), ring 16:	2.817E+02	5.300E+01	---	RAD_SHAPE (16)
SEXT	Outer annular radius (m), ring 17:	3.521E+02	6.625E+01	---	RAD_SHAPE (17)
SEXT	Outer annular radius (m), ring 18:	4.225E+02	7.950E+01	---	RAD_SHAPE (18)
SEXT	Outer annular radius (m), ring 19:	4.929E+02	9.275E+01	---	RAD_SHAPE (19)
SEXT	Outer annular radius (m), ring 20:	5.633E+02	1.060E+02	---	RAD_SHAPE (20)
SEXT	Outer annular radius (m), ring 21:	6.338E+02	1.192E+02	---	RAD_SHAPE (21)
SEXT	Outer annular radius (m), ring 22:	7.042E+02	1.325E+02	---	RAD_SHAPE (22)
SEXT	Outer annular radius (m), ring 23:	7.746E+02	1.458E+02	---	RAD_SHAPE (23)
SEXT	Outer annular radius (m), ring 24:	8.450E+02	1.590E+02	---	RAD_SHAPE (24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA (13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA (14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA (15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA (16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA (17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA (18)
SEXT	Ring 19	0.000E+00	2.000E-01	---	FRACA (19)
SEXT	Ring 20	0.000E+00	1.700E-01	---	FRACA (20)
SEXT	Ring 21	2.300E-02	1.500E-01	---	FRACA (21)
SEXT	Ring 22	5.300E-02	1.300E-01	---	FRACA (22)
SEXT	Ring 23	4.900E-02	1.200E-01	---	FRACA (23)
SEXT	Ring 24	2.000E-02	5.200E-02	---	FRACA (24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	5.344E+02	5.344E+02	---	RAD_SHAPE (25)
SEXT	Outer annular radius (m), ring 26:	5.549E+02	5.549E+02	---	RAD_SHAPE (26)
SEXT	Outer annular radius (m), ring 27:	5.754E+02	5.754E+02	---	RAD_SHAPE (27)
SEXT	Outer annular radius (m), ring 28:	5.959E+02	5.959E+02	---	RAD_SHAPE (28)
SEXT	Outer annular radius (m), ring 29:	6.207E+02	6.207E+02	---	RAD_SHAPE (29)

SEXT	Outer annular radius (m), ring 30:	6.455E+02	6.455E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	6.702E+02	6.702E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	6.950E+02	6.950E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	7.197E+02	7.197E+02	---	RAD_SHAPE(33)
SEXT	Outer annular radius (m), ring 34:	7.445E+02	7.445E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	7.671E+02	7.671E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	7.898E+02	7.898E+02	---	RAD_SHAPE(36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.515E-02	1.515E-02	---	FRACA(26)
SEXT	Ring 27	3.824E-02	3.824E-02	---	FRACA(27)
SEXT	Ring 28	5.286E-02	5.286E-02	---	FRACA(28)
SEXT	Ring 29	5.775E-02	5.775E-02	---	FRACA(29)
SEXT	Ring 30	5.528E-02	5.528E-02	---	FRACA(30)
SEXT	Ring 31	5.303E-02	5.303E-02	---	FRACA(31)
SEXT	Ring 32	5.096E-02	5.096E-02	---	FRACA(32)
SEXT	Ring 33	4.905E-02	4.905E-02	---	FRACA(33)
SEXT	Ring 34	4.728E-02	4.728E-02	---	FRACA(34)
SEXT	Ring 35	3.127E-02	3.127E-02	---	FRACA(35)
SEXT	Ring 36	8.151E-03	8.151E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	5.679E+02	5.679E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	5.876E+02	5.876E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	6.074E+02	6.074E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	6.271E+02	6.271E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	6.523E+02	6.523E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	6.774E+02	6.774E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	7.025E+02	7.025E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	7.277E+02	7.277E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	7.528E+02	7.528E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	7.780E+02	7.780E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	8.001E+02	8.001E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	8.222E+02	8.222E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.422E-02	1.422E-02	---	FRACA(38)
SEXT	Ring 39	3.603E-02	3.603E-02	---	FRACA(39)
SEXT	Ring 40	4.998E-02	4.998E-02	---	FRACA(40)
SEXT	Ring 41	5.473E-02	5.473E-02	---	FRACA(41)
SEXT	Ring 42	5.249E-02	5.249E-02	---	FRACA(42)

SEXT	Ring 43	5.043E-02	5.043E-02	---	FRACA (43)
SEXT	Ring 44	4.853E-02	4.853E-02	---	FRACA (44)
SEXT	Ring 45	4.677E-02	4.677E-02	---	FRACA (45)
SEXT	Ring 46	4.514E-02	4.514E-02	---	FRACA (46)
SEXT	Ring 47	2.993E-02	2.993E-02	---	FRACA (47)
SEXT	Ring 48	7.835E-03	7.835E-03	---	FRACA (48)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 37

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	6.696E+02	6.696E+02	---	RAD_SHAPE (49)
SEXT	Outer annular radius (m), ring 50:	6.916E+02	6.916E+02	---	RAD_SHAPE (50)
SEXT	Outer annular radius (m), ring 51:	7.136E+02	7.136E+02	---	RAD_SHAPE (51)
SEXT	Outer annular radius (m), ring 52:	7.355E+02	7.355E+02	---	RAD_SHAPE (52)
SEXT	Outer annular radius (m), ring 53:	7.575E+02	7.575E+02	---	RAD_SHAPE (53)
SEXT	Outer annular radius (m), ring 54:	7.866E+02	7.866E+02	---	RAD_SHAPE (54)
SEXT	Outer annular radius (m), ring 55:	8.157E+02	8.157E+02	---	RAD_SHAPE (55)
SEXT	Outer annular radius (m), ring 56:	8.448E+02	8.448E+02	---	RAD_SHAPE (56)
SEXT	Outer annular radius (m), ring 57:	8.739E+02	8.739E+02	---	RAD_SHAPE (57)
SEXT	Outer annular radius (m), ring 58:	8.969E+02	8.969E+02	---	RAD_SHAPE (58)
SEXT	Outer annular radius (m), ring 59:	9.199E+02	9.199E+02	---	RAD_SHAPE (59)
SEXT	Outer annular radius (m), ring 60:	9.429E+02	9.429E+02	---	RAD_SHAPE (60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA (49)
SEXT	Ring 50	8.224E-03	8.224E-03	---	FRACA (50)
SEXT	Ring 51	2.260E-02	2.260E-02	---	FRACA (51)
SEXT	Ring 52	3.416E-02	3.416E-02	---	FRACA (52)
SEXT	Ring 53	4.399E-02	4.399E-02	---	FRACA (53)
SEXT	Ring 54	4.740E-02	4.740E-02	---	FRACA (54)
SEXT	Ring 55	4.537E-02	4.537E-02	---	FRACA (55)
SEXT	Ring 56	4.352E-02	4.352E-02	---	FRACA (56)
SEXT	Ring 57	4.182E-02	4.182E-02	---	FRACA (57)
SEXT	Ring 58	3.234E-02	3.234E-02	---	FRACA (58)
SEXT	Ring 59	1.728E-02	1.728E-02	---	FRACA (59)
SEXT	Ring 60	5.360E-03	5.360E-03	---	FRACA (60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	6.430E+02	6.430E+02	---	RAD_SHAPE (61)
SEXT	Outer annular radius (m), ring 62:	6.638E+02	6.638E+02	---	RAD_SHAPE (62)
SEXT	Outer annular radius (m), ring 63:	6.847E+02	6.847E+02	---	RAD_SHAPE (63)
SEXT	Outer annular radius (m), ring 64:	7.055E+02	7.055E+02	---	RAD_SHAPE (64)
SEXT	Outer annular radius (m), ring 65:	7.300E+02	7.300E+02	---	RAD_SHAPE (65)
SEXT	Outer annular radius (m), ring 66:	7.544E+02	7.544E+02	---	RAD_SHAPE (66)

SEXT	Outer annular radius (m), ring 67:	7.789E+02	7.789E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	8.033E+02	8.033E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	8.278E+02	8.278E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	8.522E+02	8.522E+02	---	RAD_SHAPE(70)
SEXT	Outer annular radius (m), ring 71:	8.763E+02	8.763E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	9.004E+02	9.004E+02	---	RAD_SHAPE(72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA(61)
SEXT	Ring 62	1.195E-02	1.195E-02	---	FRACA(62)
SEXT	Ring 63	3.106E-02	3.106E-02	---	FRACA(63)
SEXT	Ring 64	4.421E-02	4.421E-02	---	FRACA(64)
SEXT	Ring 65	4.896E-02	4.896E-02	---	FRACA(65)
SEXT	Ring 66	4.720E-02	4.720E-02	---	FRACA(66)
SEXT	Ring 67	4.556E-02	4.556E-02	---	FRACA(67)
SEXT	Ring 68	4.404E-02	4.404E-02	---	FRACA(68)
SEXT	Ring 69	4.262E-02	4.262E-02	---	FRACA(69)
SEXT	Ring 70	4.130E-02	4.130E-02	---	FRACA(70)
SEXT	Ring 71	2.784E-02	2.784E-02	---	FRACA(71)
SEXT	Ring 72	7.584E-03	7.584E-03	---	FRACA(72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY(1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY(2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY(3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY(4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS(1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS(2)
RADN	in pasture	not used	2.000E-06	---	DIFOS(3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS(4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS(5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM
RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK(1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK(2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT(1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT(2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT(3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT(4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK(1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK(2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT(1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT(2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT(3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT(4)

Summary of Pathway Selections

Pathway	User Selection
---------	----------------

1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 40
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	5.769E-06	5.765E-06	5.756E-06	5.726E-06	5.642E-06	5.363E-06	4.675E-06	3.185E-06
M(t):	2.308E-07	2.306E-07	2.303E-07	2.291E-07	2.257E-07	2.145E-07	1.870E-07	1.274E-07

0Maximum TDOSE(t): 5.769E-06 mrem/yr at t = 0 years

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 41
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.86E-10	0	6.18E-08	1	0.00E+00	0	6.55E-10	0	9.95E-12	0	4.35E-11	0	1.93E-13	0	6.28E-08	1
U-235	8.78E-07	15	3.58E-09	0	0.00E+00	0	4.00E-11	0	6.09E-13	0	2.66E-12	0	1.18E-14	0	8.82E-07	15
U-238	4.78E-06	83	4.65E-08	1	0.00E+00	0	5.59E-10	0	8.50E-12	0	3.71E-11	0	1.65E-13	0	4.82E-06	84
Total	5.66E-06	98	1.12E-07	2	0.00E+00	0	1.25E-09	0	1.91E-11	0	8.33E-11	0	3.70E-13	0	5.77E-06	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.87E-10	0	6.17E-08	1	0.00E+00	0	6.57E-10	0	1.01E-11	0	4.38E-11	0	5.75E-13	0	6.27E-08	1
U-235	8.78E-07	15	3.58E-09	0	0.00E+00	0	4.02E-11	0	6.19E-13	0	2.67E-12	0	3.52E-14	0	8.81E-07	15
U-238	4.77E-06	83	4.65E-08	1	0.00E+00	0	5.61E-10	0	8.61E-12	0	3.74E-11	0	4.91E-13	0	4.82E-06	84
Total	5.65E-06	98	1.12E-07	2	0.00E+00	0	1.26E-09	0	1.93E-11	0	8.38E-11	0	1.10E-12	0	5.77E-06	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

From releases to ground water and to surface water

	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
--	--------	------	-------	-------	------	------	------	-------

Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.95E-10	0	6.16E-08	1	0.00E+00	0	6.63E-10	0	1.04E-11	0	4.43E-11	0	1.32E-12	0	6.27E-08	1
U-235	8.76E-07	15	3.58E-09	0	0.00E+00	0	4.05E-11	0	6.40E-13	0	2.71E-12	0	8.09E-14	0	8.80E-07	15
U-238	4.77E-06	83	4.64E-08	1	0.00E+00	0	5.66E-10	0	8.84E-12	0	3.78E-11	0	1.13E-12	0	4.81E-06	84
Total	5.64E-06	98	1.12E-07	2	0.00E+00	0	1.27E-09	0	1.98E-11	0	8.48E-11	0	2.53E-12	0	5.76E-06	100

0*Sum of dose from all releases and from primary contamination.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

		From releases to ground water and to surface water														
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	3.68E-10	0	6.14E-08	1	0.00E+00	0	6.80E-10	0	1.12E-11	0	4.60E-11	0	3.76E-12	0	6.25E-08	1
U-235	8.72E-07	15	3.57E-09	0	0.00E+00	0	4.16E-11	0	7.10E-13	0	2.81E-12	0	2.30E-13	0	8.75E-07	15
U-238	4.74E-06	83	4.62E-08	1	0.00E+00	0	5.80E-10	0	9.58E-12	0	3.93E-11	0	3.21E-12	0	4.79E-06	84

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

From releases to ground water and to surface water

[illegible]

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	9.81E-10	0	6.06E-08	1	0.00E+00	0	7.18E-10	0	1.32E-11	0	4.98E-11	0	9.43E-12	0	6.23E-08	1
U-235	8.59E-07	15	3.57E-09	0	0.00E+00	0	4.43E-11	0	9.00E-13	0	3.04E-12	0	5.80E-13	0	8.63E-07	15
U-238	4.67E-06	83	4.55E-08	1	0.00E+00	0	6.12E-10	0	1.13E-11	0	4.25E-11	0	8.04E-12	0	4.72E-06	84
Total	5.53E-06	98	1.10E-07	2	0.00E+00	0	1.37E-09	0	2.54E-11	0	9.53E-11	0	1.80E-11	0	5.64E-06	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

$T_{1/2}$ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 100 years

From releases to ground water and to surface water

[illegible]

Total 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 100 years

0		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)														All Pathways*	
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil			
Radio-	Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234		7.57E-09	0	5.78E-08	1	0.00E+00	0	7.71E-10	0	1.66E-11	0	5.54E-11	0	1.95E-11	0	6.63E-08	1
U-235		8.19E-07	15	3.61E-09	0	0.00E+00	0	4.91E-11	0	1.43E-12	0	3.39E-12	0	1.22E-12	0	8.23E-07	15
U-238		4.43E-06	83	4.32E-08	1	0.00E+00	0	6.55E-10	0	1.40E-11	0	4.73E-11	0	1.66E-11	0	4.47E-06	83
Total		5.26E-06	98	1.05E-07	2	0.00E+00	0	1.47E-09	0	3.20E-11	0	1.06E-10	0	3.73E-11	0	5.36E-06	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

0		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio- Nuclide		Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234		5.84E-08	1	5.09E-08	1	0.00E+00	0	7.24E-10	0	1.77E-11	0	5.21E-11	0	2.29E-11	0	1.10E-07	2
U-235		7.15E-07	15	3.66E-09	0	0.00E+00	0	4.97E-11	0	2.27E-12	0	3.16E-12	0	1.46E-12	0	7.19E-07	15
U-238		3.81E-06	81	3.71E-08	1	0.00E+00	0	5.99E-10	0	1.37E-11	0	4.41E-11	0	1.86E-11	0	3.85E-06	82
Total		4.58E-06	98	9.16E-08	2	0.00E+00	0	1.37E-09	0	3.37E-11	0	9.93E-11	0	4.29E-11	0	4.68E-06	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years																	
Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																	
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*		
0	Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
	U-234	4.38E-07	14	3.33E-08	1	0.00E+00	0	5.95E-10	0	2.79E-11	0	3.60E-11	0	2.30E-11	0	4.72E-07	15
	U-235	4.44E-07	14	3.31E-09	0	0.00E+00	0	3.92E-11	0	3.12E-12	0	1.88E-12	0	1.06E-12	0	4.47E-07	14
	U-238	2.24E-06	70	2.19E-08	1	0.00E+00	0	3.55E-10	0	8.16E-12	0	2.61E-11	0	1.11E-11	0	2.27E-06	71
	Total	3.13E-06	98	5.86E-08	2	0.00E+00	0	9.89E-10	0	3.92E-11	0	6.41E-11	0	3.52E-11	0	3.19E-06	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Dose/Source Ratios Summed Over All Pathways Parent and Progeny Principal Radionuclide Contributions Indicated												
Parent (i)	Product (j)	Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g)									
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03		
U-234	U-234	1.000E+00	4.226E-09	4.223E-09	4.217E-09	4.197E-09	4.137E-09	3.931E-09	3.381E-09	1.988E-09		
U-234	Th-230	1.000E+00	2.101E-13	6.300E-13	1.469E-12	4.395E-12	1.267E-11	4.068E-11	1.130E-10	2.950E-10		
U-234	Ra-226+D	1.000E+00	1.918E-14	1.227E-13	6.377E-13	5.656E-12	4.711E-11	4.912E-10	3.917E-09	2.950E-08		
U-234	Pb-210+D	1.000E+00	8.400E-20	1.080E-18	1.192E-17	2.968E-16	6.326E-15	1.511E-13	1.852E-12	1.692E-11		
U-234	Po-210	1.000E+00	6.230E-21	1.278E-19	2.014E-18	6.578E-17	1.577E-15	4.082E-14	5.314E-13	5.067E-12		
U-234	ΣDSR(j)		4.226E-09	4.224E-09	4.219E-09	4.207E-09	4.197E-09	4.463E-09	7.413E-09	3.181E-08		
U-234	U-234	1.339E-06	5.659E-15	5.655E-15	5.647E-15	5.619E-15	5.540E-15	5.263E-15	4.527E-15	2.661E-15		
U-234	Th-230	1.339E-06	2.813E-19	8.436E-19	1.967E-18	5.885E-18	1.697E-17	5.447E-17	1.513E-16	3.949E-16		
U-234	Ra-226+D	1.339E-06	2.568E-20	1.643E-19	8.539E-19	7.574E-18	6.308E-17	6.577E-16	5.245E-15	3.950E-14		
U-234	Pb-210+D1	1.339E-06	4.737E-25	6.085E-24	6.703E-23	1.661E-21	3.494E-20	8.079E-19	9.510E-18	8.401E-17		
U-234	ΣDSR(j)		5.659E-15	5.656E-15	5.650E-15	5.633E-15	5.620E-15	5.976E-15	9.932E-15	4.264E-14		
U-235+D	U-235+D	1.000E+00	9.233E-07	9.226E-07	9.212E-07	9.164E-07	9.027E-07	8.562E-07	7.361E-07	4.336E-07		
U-235+D	Pa-231	1.000E+00	3.531E-12	1.059E-11	2.467E-11	7.362E-11	2.107E-10	6.587E-10	1.690E-09	3.291E-09		

U-235+D	Ac-227+D	1.000E+00	4.188E-13	2.654E-12	1.351E-11	1.112E-10	7.584E-10	4.548E-09	1.479E-08	3.106E-08
U-235	ΣDSR(j)		9.233E-07	9.226E-07	9.213E-07	9.166E-07	9.036E-07	8.614E-07	7.526E-07	4.679E-07
0U-238	U-238	5.450E-07	2.088E-15	2.087E-15	2.084E-15	2.074E-15	2.045E-15	1.943E-15	1.672E-15	9.848E-16
0U-238+D	U-238+D	1.000E+00	3.689E-07	3.686E-07	3.680E-07	3.661E-07	3.606E-07	3.420E-07	2.941E-07	1.732E-07
U-238+D	U-234	1.000E+00	5.965E-15	1.788E-14	4.167E-14	1.244E-13	3.563E-13	1.116E-12	2.870E-12	5.622E-12
U-238+D	Th-230	1.000E+00	2.208E-19	1.412E-18	7.344E-18	6.517E-17	5.437E-16	5.699E-15	4.613E-14	3.647E-13
U-238+D	Ra-226+D	1.000E+00	1.490E-20	1.928E-19	2.152E-18	5.605E-17	1.351E-15	4.625E-14	1.092E-12	2.637E-11
U-238+D	Pb-210+D	1.000E+00	4.848E-26	1.345E-24	3.088E-23	2.246E-21	1.420E-19	1.192E-17	4.704E-16	1.456E-14
U-238+D	Po-210	1.000E+00	3.895E-27	1.426E-25	4.757E-24	4.755E-22	3.477E-20	3.199E-18	1.341E-16	4.324E-15
U-238	ΣDSR(j)		3.689E-07	3.686E-07	3.680E-07	3.661E-07	3.606E-07	3.420E-07	2.941E-07	1.732E-07
0U-238+D	U-238+D	1.339E-06	4.939E-13	4.935E-13	4.928E-13	4.902E-13	4.829E-13	4.580E-13	3.937E-13	2.319E-13
U-238+D	U-234	1.339E-06	7.987E-21	2.395E-20	5.580E-20	1.666E-19	4.771E-19	1.494E-18	3.842E-18	7.528E-18
U-238+D	Th-230	1.339E-06	2.957E-25	1.891E-24	9.833E-24	8.727E-23	7.280E-22	7.631E-21	6.177E-20	4.883E-19
U-238+D	Ra-226+D	1.339E-06	2.007E-26	2.582E-25	2.882E-24	7.505E-23	1.809E-21	6.193E-20	1.463E-18	3.531E-17
U-238+D	Pb-210+D1	1.339E-06	4.390E-31	7.919E-30	1.738E-28	1.256E-26	7.846E-25	6.384E-23	2.426E-21	7.279E-20
U-238	ΣDSR(j)		4.939E-13	4.935E-13	4.928E-13	4.902E-13	4.829E-13	4.580E-13	3.937E-13	2.320E-13

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	5.915E+09	5.919E+09	5.925E+09	5.943E+09	5.956E+09	5.602E+09	3.373E+09	7.860E+08
U-235	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.485E+01	1001	3.183E-08	7.855E+08	4.226E-09	5.915E+09
U-235	9.550E-01	0	9.233E-07	*2.160E+06	9.233E-07	*2.160E+06
U-238	1.308E+01	0	3.689E-07	*3.361E+05	3.689E-07	*3.361E+05

*At specific activity limit

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 51

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Thread Fraction Indicated											
ONuclide (j)	Parent (i)	THF(i)	t=	DOSE(j,t), mrem/yr							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00		6.276E-08	6.271E-08	6.262E-08	6.232E-08	6.144E-08	5.837E-08	5.020E-08	2.952E-08
U-234	U-234	1.339E-06		8.403E-14	8.397E-14	8.385E-14	8.344E-14	8.227E-14	7.816E-14	6.722E-14	3.952E-14
U-234	U-238	1.000E+00		7.802E-14	2.339E-13	5.451E-13	1.627E-12	4.660E-12	1.459E-11	3.753E-11	7.354E-11
U-234	ΣDOSE(j):			6.276E-08	6.271E-08	6.263E-08	6.232E-08	6.144E-08	5.839E-08	5.024E-08	2.959E-08
Th-230	U-234	1.000E+00		3.119E-12	9.355E-12	2.181E-11	6.527E-11	1.882E-10	6.041E-10	1.678E-09	4.380E-09
Th-230	U-238	1.000E+00		2.888E-18	1.848E-17	9.606E-17	8.524E-16	7.111E-15	7.455E-14	6.034E-13	4.770E-12
Th-230	ΣDOSE(j):			3.119E-12	9.355E-12	2.181E-11	6.527E-11	1.882E-10	6.042E-10	1.679E-09	4.385E-09
ORa-226	U-234	1.000E+00		2.848E-13	1.822E-12	9.470E-12	8.399E-11	6.995E-10	7.294E-09	5.816E-08	4.381E-07
Ra-226	U-238	1.000E+00		1.949E-19	2.522E-18	2.815E-17	7.332E-16	1.767E-14	6.049E-13	1.429E-11	3.450E-10
Ra-226	ΣDOSE(j):			2.848E-13	1.822E-12	9.470E-12	8.399E-11	6.996E-10	7.294E-09	5.818E-08	4.384E-07
OPb-210	U-234	1.000E+00		1.247E-18	1.604E-17	1.770E-16	4.407E-15	9.394E-14	2.244E-12	2.750E-11	2.513E-10
Pb-210	U-238	1.000E+00		6.341E-25	1.759E-23	4.040E-22	2.937E-20	1.858E-18	1.560E-16	6.153E-15	1.905E-13
Pb-210	ΣDOSE(j):			1.247E-18	1.604E-17	1.770E-16	4.407E-15	9.395E-14	2.244E-12	2.750E-11	2.515E-10
OPo-210	U-234	1.000E+00		9.252E-20	1.897E-18	2.990E-17	9.769E-16	2.341E-14	6.062E-13	7.891E-12	7.525E-11
Po-210	U-238	1.000E+00		5.094E-26	1.865E-24	6.222E-23	6.219E-21	4.548E-19	4.184E-17	1.754E-15	5.656E-14
Po-210	ΣDOSE(j):			9.252E-20	1.897E-18	2.990E-17	9.769E-16	2.341E-14	6.063E-13	7.893E-12	7.530E-11
0Th-230	U-234	1.339E-06		4.177E-18	1.253E-17	2.921E-17	8.740E-17	2.520E-16	8.089E-16	2.247E-15	5.865E-15
Th-230	U-238	1.339E-06		3.868E-24	2.474E-23	1.286E-22	1.141E-21	9.522E-21	9.982E-20	8.080E-19	6.387E-18
Th-230	ΣDOSE(j):			4.177E-18	1.253E-17	2.921E-17	8.740E-17	2.520E-16	8.090E-16	2.248E-15	5.871E-15
0Ra-226	U-234	1.339E-06		3.814E-19	2.439E-18	1.268E-17	1.125E-16	9.367E-16	9.766E-15	7.788E-14	5.866E-13
Ra-226	U-238	1.339E-06		2.626E-25	3.378E-24	3.769E-23	9.817E-22	2.366E-20	8.100E-19	1.913E-17	4.619E-16
Ra-226	ΣDOSE(j):			3.814E-19	2.439E-18	1.268E-17	1.125E-16	9.367E-16	9.767E-15	7.790E-14	5.871E-13
OPb-210	U-234	1.339E-06		7.034E-24	9.036E-23	9.954E-22	2.466E-20	5.189E-19	1.200E-17	1.412E-16	1.248E-15
Pb-210	U-238	1.339E-06		5.743E-30	1.036E-28	2.273E-27	1.643E-25	1.026E-23	8.351E-22	3.174E-20	9.521E-19
Pb-210	ΣDOSE(j):			7.034E-24	9.037E-23	9.954E-22	2.466E-20	5.189E-19	1.200E-17	1.413E-16	1.249E-15
0U-235	U-235	1.000E+00		8.818E-07	8.811E-07	8.798E-07	8.752E-07	8.621E-07	8.177E-07	7.029E-07	4.141E-07
0Pa-231	U-235	1.000E+00		3.372E-12	1.011E-11	2.356E-11	7.031E-11	2.012E-10	6.290E-10	1.614E-09	3.143E-09
0Ac-227	U-235	1.000E+00		4.000E-13	2.534E-12	1.290E-11	1.062E-10	7.242E-10	4.343E-09	1.413E-08	2.966E-08
0U-238	U-238	5.450E-07		2.731E-14	2.729E-14	2.726E-14	2.712E-14	2.674E-14	2.541E-14	2.187E-14	1.288E-14
U-238	U-238	1.000E+00		4.825E-06	4.821E-06	4.814E-06	4.789E-06	4.717E-06	4.474E-06	3.846E-06	2.266E-06
U-238	ΣDOSE(j):			4.825E-06	4.821E-06	4.814E-06	4.789E-06	4.717E-06	4.474E-06	3.846E-06	2.266E-06
0U-238	U-238	1.339E-06		6.460E-12	6.456E-12	6.446E-12	6.412E-12	6.316E-12	5.991E-12	5.150E-12	3.034E-12
1RESRAD-OFFSITE, Version 4.0				T½ Limit = 30 days 03/28/2023 12:34 Page 52							
Parent Dose Report											
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1											
File : SHIPROCK ALT1 OFFSITE RESA.ROF											

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Thread Fraction Indicated											
ONuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr								
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-238	1.339E-06		1.045E-19	3.132E-19	7.299E-19	2.179E-18	6.240E-18	1.954E-17	5.026E-17	9.847E-17

THF(i) is the thread fraction of the parent nuclide.
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 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Individual Nuclide Soil Concentration										
Parent Nuclide and Thread Fraction Indicated										
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	1.000E+03
U-234	U-234	1.000E+00		1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.376E+01	1.183E+01
U-234	U-234	1.339E-06		1.988E-05	1.987E-05	1.984E-05	1.973E-05	1.944E-05	1.843E-05	1.584E-05
U-234	U-238	1.000E+00		0.000E+00	3.690E-05	1.105E-04	3.665E-04	1.083E-03	3.424E-03	8.827E-03
U-234	ΣS(j):			1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.377E+01	1.184E+01
0Th-230	U-234	1.000E+00		0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.658E-02
Th-230	U-238	1.000E+00		0.000E+00	1.715E-10	1.531E-09	1.690E-08	1.505E-07	1.614E-06	1.314E-05
Th-230	ΣS(j):			0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.659E-02
0Ra-226	U-234	1.000E+00		0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03
Ra-226	U-238	1.000E+00		0.000E+00	2.540E-14	6.675E-13	2.441E-11	6.499E-10	2.304E-08	5.496E-07
Ra-226	ΣS(j):			0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03
0Pb-210	U-234	1.000E+00		0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.822E-03
Pb-210	U-238	1.000E+00		0.000E+00	2.104E-16	1.566E-14	1.797E-12	1.278E-10	1.078E-08	4.094E-07
Pb-210	ΣS(j):			0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.823E-03
0Po-210	U-234	1.000E+00		0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03
Po-210	U-238	1.000E+00		0.000E+00	6.291E-17	8.792E-15	1.464E-12	1.191E-10	1.055E-08	4.063E-07
Po-210	ΣS(j):			0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03
0Th-230	U-234	1.339E-06		0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.422E-09	1.760E-08	4.898E-08
Th-230	U-238	1.339E-06		0.000E+00	2.296E-16	2.049E-15	2.263E-14	2.015E-13	2.161E-12	1.759E-11
Th-230	ΣS(j):			0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.423E-09	1.760E-08	4.900E-08
0Ra-226	U-234	1.339E-06		0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.000E-09
Ra-226	U-238	1.339E-06		0.000E+00	3.411E-20	8.938E-19	3.269E-17	8.702E-16	3.085E-14	7.359E-13
Ra-226	ΣS(j):			0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.001E-09
0Pb-210	U-234	1.339E-06		0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09
Pb-210	U-238	1.339E-06		0.000E+00	3.417E-22	2.096E-20	2.406E-18	1.711E-16	1.443E-14	5.482E-13
Pb-210	ΣS(j):			0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09
0U-235	U-235	1.000E+00		9.550E-01	9.543E-01	9.528E-01	9.478E-01	9.336E-01	8.855E-01	7.612E-01
0Pa-231	U-235	1.000E+00		0.000E+00	2.019E-05	6.048E-05	2.005E-04	5.924E-04	1.871E-03	4.816E-03
0Ac-227	U-235	1.000E+00		0.000E+00	3.211E-07	2.804E-06	2.870E-05	2.088E-04	1.280E-03	4.183E-03
0U-238	U-238	5.450E-07		7.129E-06	7.123E-06	7.112E-06	7.075E-06	6.969E-06	6.609E-06	5.682E-06
U-238	U-238	1.000E+00		1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01
U-238	ΣS(j):			1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01
0U-238	U-238	1.339E-06		1.751E-05	1.750E-05	1.747E-05	1.738E-05	1.712E-05	1.624E-05	1.396E-05

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 54
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Individual Nuclide Soil Concentration

ONuclide (j)	Parent (i)	THF(i)	Parent Nuclide and Thread Fraction Indicated								
			t=	S(j,t), pCi/g							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-238	1.339E-06	0.000E+00	4.941E-11	1.480E-10	4.908E-10	1.450E-09	4.584E-09	1.182E-08	2.318E-08	

THF(i) is the thread fraction of the parent nuclide.

RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 55

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Run Time Information

ResOCalc.EXE execution began at 12:34 on 03/28/2023

ResOCalc.EXE execution ended at 12:34 on 03/28/2023

ResOCalc.EXE execution time 23.900 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years	2
Time = 1.000E+00 years	3
Time = 3.000E+00 years	4
Time = 1.000E+01 years	5
Time = 3.000E+01 years	6
Time = 1.000E+02 years	7
Time = 3.000E+02 years	8
Time = 1.000E+03 years	9

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-13	9.2E-15	0.0E+00	4.6E-17	1.4E-18	1.0E-19	2.4E-20	4.0E-13
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-12	1.0E-12	0.0E+00	4.4E-15	9.0E-16	3.6E-18	1.9E-18	3.4E-12
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-19	2.4E-19	0.0E+00	5.9E-20	2.1E-21	2.0E-21	3.6E-23	1.2E-18
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-21	5.3E-20	0.0E+00	2.9E-20	4.4E-21	1.1E-21	2.0E-23	9.3E-20
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-13	4.6E-17	0.0E+00	2.9E-18	1.1E-19	3.1E-19	1.4E-21	2.8E-13
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-14	3.1E-12	0.0E+00	1.3E-14	7.0E-17	1.1E-17	5.7E-18	3.1E-12
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-10	6.2E-08	0.0E+00	6.5E-10	1.0E-11	4.4E-11	1.9E-13	6.3E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-07	3.6E-09	0.0E+00	4.0E-11	6.1E-13	2.7E-12	1.2E-14	8.8E-07
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-06	4.7E-08	0.0E+00	5.6E-10	8.5E-12	3.7E-11	1.6E-13	4.8E-06
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06	1.1E-07	0.0E+00	1.3E-09	1.9E-11	8.3E-11	3.7E-13	5.8E-06

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-12	5.8E-14	0.0E+00	2.9E-16	4.8E-18	6.5E-19	2.9E-19	2.5E-12
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-12	3.1E-12	0.0E+00	1.3E-14	2.9E-15	8.8E-18	1.2E-17	1.0E-11
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-17	3.1E-18	0.0E+00	7.8E-19	2.9E-20	2.6E-20	8.0E-22	1.6E-17
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-20	1.1E-18	0.0E+00	6.1E-19	1.1E-19	2.3E-20	6.6E-22	1.9E-18
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-12	3.0E-16	0.0E+00	2.0E-17	8.0E-19	2.0E-18	1.8E-20	1.8E-12
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-13	9.2E-12	0.0E+00	3.9E-14	1.9E-16	2.6E-17	3.7E-17	9.4E-12
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-10	6.2E-08	0.0E+00	6.6E-10	1.0E-11	4.4E-11	5.8E-13	6.3E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-07	3.6E-09	0.0E+00	4.0E-11	6.2E-13	2.7E-12	3.5E-14	8.8E-07

U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-06	4.6E-08	0.0E+00	5.6E-10	8.6E-12	3.7E-11	4.9E-13	4.8E-06
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-06	1.1E-07	0.0E+00	1.3E-09	1.9E-11	8.4E-11	1.1E-12	5.8E-06

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 4
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 3 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-11	3.0E-13	0.0E+00	1.5E-15	1.3E-17	3.3E-18	3.0E-18	1.3E-11
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-11	7.2E-12	0.0E+00	3.2E-14	7.2E-15	1.9E-17	6.2E-17	2.4E-11
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-16	3.4E-17	0.0E+00	8.9E-18	3.3E-19	2.9E-19	1.8E-20	1.8E-16
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-18	1.7E-17	0.0E+00	9.6E-18	2.0E-18	3.6E-19	2.0E-20	3.0E-17
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-12	1.5E-15	0.0E+00	1.2E-16	4.9E-18	1.1E-17	1.9E-19	9.5E-12
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-13	2.1E-11	0.0E+00	9.1E-14	4.4E-16	5.6E-17	1.9E-16	2.2E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-10	6.2E-08	0.0E+00	6.6E-10	1.0E-11	4.4E-11	1.3E-12	6.3E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-07	3.6E-09	0.0E+00	4.0E-11	6.3E-13	2.7E-12	8.1E-14	8.8E-07
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-06	4.6E-08	0.0E+00	5.7E-10	8.8E-12	3.8E-11	1.1E-12	4.8E-06
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06	1.1E-07	0.0E+00	1.3E-09	2.0E-11	8.5E-11	2.5E-12	5.8E-06

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 5
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 10 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-10	2.4E-12	0.0E+00	1.3E-14	5.1E-17	2.9E-17	6.7E-17	1.1E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-11	2.1E-11	0.0E+00	1.1E-13	2.5E-14	5.7E-17	5.2E-16	7.0E-11
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-15	8.4E-16	0.0E+00	2.5E-16	9.4E-18	7.6E-18	1.2E-18	4.4E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-17	5.4E-16	0.0E+00	3.1E-16	7.1E-17	1.2E-17	1.8E-18	9.8E-16
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-11	1.4E-14	0.0E+00	1.5E-15	6.1E-17	1.2E-16	4.9E-18	8.4E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-13	6.4E-11	0.0E+00	2.8E-13	1.4E-15	1.6E-16	1.7E-15	6.5E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-10	6.1E-08	0.0E+00	6.8E-10	1.1E-11	4.6E-11	3.8E-12	6.2E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-07	3.5E-09	0.0E+00	4.2E-11	6.9E-13	2.8E-12	2.3E-13	8.8E-07
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-06	4.6E-08	0.0E+00	5.8E-10	9.6E-12	3.9E-11	3.2E-12	4.8E-06
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-06	1.1E-07	0.0E+00	1.3E-09	2.2E-11	8.8E-11	7.2E-12	5.7E-06

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 6
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 30 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-10	1.7E-11	0.0E+00	9.2E-14	2.4E-16	2.1E-16	1.1E-15	7.2E-10

Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10	6.1E-11	0.0E+00	3.8E-13	9.3E-14	1.8E-16	3.8E-15	2.0E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-14	1.8E-14	0.0E+00	6.6E-15	2.6E-16	1.9E-16	6.9E-17	9.4E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-16	1.2E-14	0.0E+00	7.6E-15	2.0E-15	3.1E-16	1.1E-16	2.3E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-10	1.1E-13	0.0E+00	2.1E-14	8.7E-16	1.3E-15	1.1E-16	7.0E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-12	1.9E-10	0.0E+00	8.3E-13	4.7E-15	5.1E-16	1.3E-14	1.9E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-10	6.0E-08	0.0E+00	7.2E-10	1.3E-11	5.0E-11	9.4E-12	6.1E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.6E-07	3.5E-09	0.0E+00	4.4E-11	8.1E-13	3.0E-12	5.8E-13	8.6E-07
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-06	4.5E-08	0.0E+00	6.1E-10	1.1E-11	4.2E-11	8.0E-12	4.7E-06

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 5.5E-06 1.1E-07 0.0E+00 1.4E-09 2.5E-11 9.5E-11 1.8E-11 5.6E-06

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 7

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 100 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-09	9.9E-11	0.0E+00	6.0E-13	1.4E-15	1.4E-15	1.2E-14	4.3E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-10	1.9E-10	0.0E+00	1.7E-12	4.3E-13	7.2E-16	2.6E-14	6.3E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-12	4.0E-13	0.0E+00	2.4E-13	1.0E-14	5.9E-15	4.2E-15	2.2E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-14	2.9E-13	0.0E+00	2.0E-13	7.0E-14	9.1E-15	6.9E-15	6.1E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-09	1.2E-12	0.0E+00	4.7E-13	1.9E-14	2.4E-14	3.0E-15	7.3E-09
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.3E-12	5.9E-10	0.0E+00	2.9E-12	2.3E-14	2.1E-15	1.2E-13	6.0E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-10	5.7E-08	0.0E+00	7.7E-10	1.6E-11	5.5E-11	1.9E-11	5.8E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-07	3.3E-09	0.0E+00	4.7E-11	1.0E-12	3.4E-12	1.2E-12	8.2E-07
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-06	4.3E-08	0.0E+00	6.5E-10	1.4E-11	4.7E-11	1.7E-11	4.5E-06

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 5.3E-06 1.0E-07 0.0E+00 1.5E-09 3.2E-11 1.1E-10 3.7E-11 5.4E-06

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 8

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 300 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	3.2E-10	0.0E+00	2.0E-12	4.5E-15	4.8E-15	4.8E-14	1.4E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-09	4.9E-10	0.0E+00	4.9E-12	1.3E-12	2.1E-15	8.6E-14	1.6E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	4.7E-12	0.0E+00	4.1E-12	1.8E-13	9.5E-14	8.8E-14	2.8E-11
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-13	3.4E-12	0.0E+00	2.7E-12	1.2E-12	1.3E-13	1.5E-13	7.9E-12
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-08	9.5E-12	0.0E+00	6.5E-12	2.6E-13	3.1E-13	4.5E-14	5.8E-08
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-11	1.6E-09	0.0E+00	9.8E-12	1.1E-13	8.8E-15	8.6E-13	1.7E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-10	4.9E-08	0.0E+00	7.0E-10	1.6E-11	5.2E-11	2.2E-11	5.0E-08
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-07	2.9E-09	0.0E+00	4.3E-11	9.8E-13	3.2E-12	1.3E-12	7.0E-07
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-06	3.7E-08	0.0E+00	6.0E-10	1.4E-11	4.4E-11	1.9E-11	3.8E-06

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 4.6E-06 9.2E-08 0.0E+00 1.4E-09 3.4E-11 9.9E-11 4.3E-11 4.7E-06

0*Sum of dose from all releases and from primary contamination.

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Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

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Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)

DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)
DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
	DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
	DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
	DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
	DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
	DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
	DCSF	Soil ingestion, slope factors, 1/(pCi):			
	DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
	DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
	DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
	DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
	DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)

DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	3.07E-19	0	3.03E-21	0	1.87E-23	0	5.89E-25	0	4.13E-26	0	9.61E-27	0	3.10E-19	0
Pa-231	1.85E-18	0	9.20E-20	0	5.55E-22	0	1.14E-22	0	4.55E-25	0	2.41E-25	0	1.94E-18	0
Pb-210	4.78E-25	0	1.83E-25	0	2.70E-26	0	9.51E-28	0	9.17E-28	0	1.64E-29	0	6.90E-25	0

Po-210	3.34E-27	0	4.89E-26	0	1.48E-26	0	2.21E-27	0	5.70E-28	0	1.02E-29	0	6.99E-26	0
Ra-226	2.29E-19	0	3.72E-23	0	1.44E-24	0	5.50E-26	0	1.53E-25	0	7.09E-28	0	2.29E-19	0
Th-230	2.90E-20	0	2.78E-19	0	1.96E-21	0	1.05E-23	0	1.62E-24	0	8.63E-25	0	3.09E-19	0
U-234	2.09E-16	0	4.94E-14	1	3.41E-16	0	5.19E-18	0	2.27E-17	0	1.01E-19	0	5.00E-14	1
U-235	6.91E-13	16	2.86E-15	0	2.24E-17	0	3.41E-19	0	1.49E-18	0	6.61E-21	0	6.94E-13	16
U-238	3.48E-12	82	3.70E-14	1	3.79E-16	0	5.77E-18	0	2.52E-17	0	1.12E-19	0	3.52E-12	83
<hr/>														
Total	4.17E-12	98	8.93E-14	2	7.43E-16	0	1.13E-17	0	4.94E-17	0	2.19E-19	0	4.26E-12	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 5

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
<hr/>									
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water														
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.10E-16	0	4.94E-14	1	0.00E+00	0	3.41E-16	0	5.19E-18	0	2.27E-17	0	1.01E-19	0	5.00E-14	1

U-235	6.91E-13	16	2.86E-15	0	0.00E+00	0	2.24E-17	0	3.41E-19	0	1.49E-18	0	6.61E-21	0	6.94E-13	16
U-238	3.48E-12	82	3.70E-14	1	0.00E+00	0	3.79E-16	0	5.77E-18	0	2.52E-17	0	1.12E-19	0	3.52E-12	83
Total	4.17E-12	98	8.93E-14	2	0.00E+00	0	7.43E-16	0	1.13E-17	0	4.94E-17	0	2.19E-19	0	4.26E-12	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 6

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0
0 Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.95E-18	0	1.92E-20	0	1.19E-22	0	1.94E-24	0	2.64E-25	0	1.16E-25	0	1.97E-18	0
Pa-231	5.55E-18	0	2.76E-19	0	1.69E-21	0	3.66E-22	0	1.12E-24	0	1.53E-24	0	5.83E-18	0
Pb-210	6.14E-24	0	2.36E-24	0	3.58E-25	0	1.32E-26	0	1.18E-26	0	3.68E-28	0	8.88E-24	0
Po-210	6.67E-26	0	9.77E-25	0	3.06E-25	0	5.78E-26	0	1.16E-26	0	3.34E-28	0	1.42E-24	0
Ra-226	1.46E-18	0	2.38E-22	0	9.80E-24	0	4.00E-25	0	1.01E-24	0	8.71E-27	0	1.46E-18	0
Th-230	8.69E-20	0	8.34E-19	0	5.87E-21	0	2.89E-23	0	3.98E-24	0	5.51E-24	0	9.27E-19	0
U-234	2.09E-16	0	4.94E-14	1	3.42E-16	0	5.25E-18	0	2.28E-17	0	3.00E-19	0	4.99E-14	1
U-235	6.90E-13	16	2.85E-15	0	2.25E-17	0	3.45E-19	0	1.50E-18	0	1.97E-20	0	6.93E-13	16
U-238	3.48E-12	82	3.70E-14	1	3.81E-16	0	5.84E-18	0	2.54E-17	0	3.33E-19	0	3.51E-12	83
Total	4.17E-12	98	8.92E-14	2	7.46E-16	0	1.14E-17	0	4.97E-17	0	6.53E-19	0	4.26E-12	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 7

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.11E-16	0	4.94E-14	1	0.00E+00	0	3.42E-16	0	5.25E-18	0	2.28E-17	0	3.00E-19	0	4.99E-14	1
U-235	6.90E-13	16	2.85E-15	0	0.00E+00	0	2.25E-17	0	3.46E-19	0	1.50E-18	0	1.97E-20	0	6.93E-13	16
U-238	3.48E-12	82	3.70E-14	1	0.00E+00	0	3.81E-16	0	5.84E-18	0	2.54E-17	0	3.33E-19	0	3.51E-12	83
Total	4.17E-12	98	8.92E-14	2	0.00E+00	0	7.46E-16	0	1.14E-17	0	4.97E-17	0	6.53E-19	0	4.26E-12	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	9.91E-18	0	9.76E-20	0	6.12E-22	0	5.14E-24	0	1.36E-24	0	1.23E-24	0	1.00E-17	0
Pa-231	1.29E-17	0	6.43E-19	0	4.08E-21	0	9.11E-22	0	2.40E-24	0	7.85E-24	0	1.36E-17	0
Pb-210	6.76E-23	0	2.59E-23	0	4.09E-24	0	1.52E-25	0	1.32E-25	0	8.14E-27	0	9.79E-23	0
Po-210	1.04E-24	0	1.53E-23	0	4.83E-24	0	9.90E-25	0	1.83E-25	0	1.01E-26	0	2.23E-23	0
Ra-226	7.60E-18	0	1.24E-21	0	5.76E-23	0	2.41E-24	0	5.52E-24	0	9.55E-26	0	7.60E-18	0
Th-230	2.03E-19	0	1.94E-18	0	1.37E-20	0	6.58E-23	0	8.44E-24	0	2.85E-23	0	2.16E-18	0
U-234	2.09E-16	0	4.93E-14	1	3.45E-16	0	5.39E-18	0	2.31E-17	0	6.89E-19	0	4.99E-14	1
U-235	6.89E-13	16	2.85E-15	0	2.27E-17	0	3.54E-19	0	1.52E-18	0	4.53E-20	0	6.92E-13	16
U-238	3.47E-12	82	3.69E-14	1	3.84E-16	0	6.00E-18	0	2.57E-17	0	7.66E-19	0	3.51E-12	83
Total	4.16E-12	98	8.91E-14	2	7.52E-16	0	1.17E-17	0	5.03E-17	0	1.50E-18	0	4.25E-12	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t = 3 years								
Radionuclides								
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.17E-16	0	4.93E-14	1	0.00E+00	0	3.45E-16	0	5.39E-18	0	2.31E-17	0	6.89E-19	0	4.99E-14	1
U-235	6.89E-13	16	2.85E-15	0	0.00E+00	0	2.27E-17	0	3.55E-19	0	1.52E-18	0	4.53E-20	0	6.92E-13	16
U-238	3.47E-12	82	3.69E-14	1	0.00E+00	0	3.84E-16	0	6.00E-18	0	2.57E-17	0	7.66E-19	0	3.51E-12	83
Total	4.16E-12	98	8.91E-14	2	0.00E+00	0	7.52E-16	0	1.17E-17	0	5.03E-17	0	1.50E-18	0	4.25E-12	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 10

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years
From releases to ground water and to surface water

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.76E-16	0	4.90E-14	1	0.00E+00	0	3.54E-16	0	5.84E-18	0	2.40E-17	0	1.96E-18	0	4.97E-14	1
U-235	6.86E-13	16	2.84E-15	0	0.00E+00	0	2.33E-17	0	3.87E-19	0	1.58E-18	0	1.29E-19	0	6.89E-13	16
U-238	3.45E-12	82	3.67E-14	1	0.00E+00	0	3.94E-16	0	6.50E-18	0	2.66E-17	0	2.18E-18	0	3.49E-12	83
Total	4.14E-12	98	8.86E-14	2	0.00E+00	0	7.71E-16	0	1.27E-17	0	5.22E-17	0	4.27E-18	0	4.23E-12	100

*** Sum of risk from all releases and from primary contamination via all pathways.

File : SHIPROCK ALT1 OFFSITE RESA.ROF

[illegible]

Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
<hr/>														
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	5.57E-16	0	5.48E-18	0	3.74E-20	0	9.97E-23	0	8.61E-23	0	4.38E-22	0	5.62E-16	0
Pa-231	1.10E-16	0	5.49E-18	0	4.87E-20	0	1.19E-20	0	2.35E-23	0	4.81E-22	0	1.16E-16	0
Pb-210	3.50E-20	0	1.34E-20	0	3.05E-21	0	1.22E-22	0	8.62E-23	0	3.20E-23	0	5.18E-20	0
Po-210	7.74E-22	0	1.13E-20	0	3.84E-21	0	1.02E-21	0	1.56E-22	0	5.59E-23	0	1.72E-20	0
Ra-226	5.62E-16	0	9.13E-20	0	1.06E-20	0	4.33E-22	0	6.70E-22	0	5.44E-23	0	5.62E-16	0
Th-230	1.75E-18	0	1.68E-17	0	1.24E-19	0	7.14E-22	0	7.73E-23	0	2.00E-21	0	1.86E-17	0
U-234	2.05E-16	0	4.83E-14	1	3.74E-16	0	6.88E-18	0	2.59E-17	0	4.91E-18	0	4.89E-14	1
U-235	6.75E-13	16	2.79E-15	0	2.46E-17	0	4.52E-19	0	1.70E-18	0	3.22E-19	0	6.78E-13	16
U-238	3.40E-12	82	3.62E-14	1	4.15E-16	0	7.65E-18	0	2.88E-17	0	5.46E-18	0	3.44E-12	83
<hr/>														
Total	4.08E-12	98	8.73E-14	2	8.14E-16	0	1.50E-17	0	5.65E-17	0	1.07E-17	0	4.17E-12	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 30 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
<hr/>								
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

0

From releases to ground water and to surface water

0

Ground Fish Radon Plant Meat Milk Soil Water

Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***
Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
U-234	7.68E-16	0	4.83E-14	1	0.00E+00	0	3.74E-16	0	6.88E-18	0	2.59E-17	0	4.91E-18	0	4.95E-14 1
U-235	6.76E-13	16	2.80E-15	0	0.00E+00	0	2.46E-17	0	4.64E-19	0	1.70E-18	0	3.23E-19	0	6.79E-13 16
U-238	3.40E-12	82	3.62E-14	1	0.00E+00	0	4.15E-16	0	7.65E-18	0	2.88E-17	0	5.46E-18	0	3.44E-12 83
Total	4.08E-12	98	8.73E-14	2	0.00E+00	0	8.14E-16	0	1.50E-17	0	5.65E-17	0	1.07E-17	0	4.17E-12 100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 14

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

0 From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

	Directly from primary contamination and						from release to atmosphere (Inhalation excludes radon)							
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	3.34E-15	0	3.28E-17	0	2.44E-19	0	5.64E-22	0	5.78E-22	0	4.97E-21	0	3.37E-15	0
Pa-231	3.45E-16	0	1.71E-17	0	2.10E-19	0	5.43E-20	0	9.17E-23	0	3.26E-21	0	3.62E-16	0
Pb-210	8.02E-19	0	3.08E-19	0	1.09E-19	0	4.65E-21	0	2.74E-21	0	1.93E-21	0	1.23E-18	0
Po-210	1.84E-20	0	2.69E-19	0	1.02E-19	0	3.53E-20	0	4.58E-21	0	3.48E-21	0	4.33E-19	0
Ra-226	5.86E-15	0	9.51E-19	0	2.34E-19	0	9.44E-21	0	1.21E-20	0	1.50E-21	0	5.86E-15	0
Th-230	5.61E-18	0	5.38E-17	0	4.40E-19	0	3.44E-21	0	3.16E-22	0	1.88E-20	0	5.99E-17	0
U-234	1.95E-16	0	4.58E-14	1	4.00E-16	0	8.57E-18	0	2.89E-17	0	1.01E-17	0	4.64E-14	1
U-235	6.41E-13	16	2.65E-15	0	2.63E-17	0	5.63E-19	0	1.90E-18	0	6.64E-19	0	6.43E-13	16
U-238	3.23E-12	81	3.43E-14	1	4.44E-16	0	9.53E-18	0	3.21E-17	0	1.12E-17	0	3.26E-12	82
Total	3.88E-12	98	8.29E-14	2	8.71E-16	0	1.88E-17	0	6.29E-17	0	2.20E-17	0	3.96E-12	100

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 100 years
Radionuclides

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.06E-15	0	4.58E-14	1	0.00E+00	0	4.00E-16	0	8.62E-18	0	2.89E-17	0	1.01E-17	0
U-235	6.44E-13	16	2.70E-15	0	0.00E+00	0	2.67E-17	0	6.18E-19	0	1.90E-18	0	6.72E-19	0
U-238	3.23E-12	81	3.43E-14	1	0.00E+00	0	4.44E-16	0	9.53E-18	0	3.21E-17	0	1.12E-17	0
Total	3.88E-12	98	8.29E-14	2	0.00E+00	0	8.71E-16	0	1.88E-17	0	6.29E-17	0	2.20E-17	0

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 16

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water											
	Ground		Fish		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)									
	Ground		Inhalation		Plant		Meat		Milk	
	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.09E-14	0	1.07E-16	0	8.21E-19	0	1.84E-21	0	1.97E-21	0

U-234	4.69E-14	1	3.95E-14	1	0.00E+00	0	3.73E-16	0	9.16E-18	0	2.71E-17	0	1.16E-17	0	8.68E-14	3
U-235	5.62E-13	16	2.43E-15	0	0.00E+00	0	2.55E-17	0	7.15E-19	0	1.77E-18	0	7.74E-19	0	5.65E-13	16
U-238	2.77E-12	80	2.95E-14	1	0.00E+00	0	4.06E-16	0	9.29E-18	0	2.99E-17	0	1.26E-17	0	2.80E-12	81
Total	3.38E-12	98	7.15E-14	2	0.00E+00	0	8.05E-16	0	1.92E-17	0	5.88E-17	0	2.49E-17	0	3.46E-12	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 18

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water															
Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
Radio-Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	2.28E-14	1	2.24E-16	0	1.72E-18	0	3.76E-21	0	4.12E-21	0	4.08E-20	0	2.30E-14	1	
Pa-231	1.72E-15	0	8.56E-17	0	1.23E-18	0	3.22E-19	0	5.13E-22	0	2.16E-20	0	1.81E-15	0	
Pb-210	8.13E-17	0	3.12E-17	0	2.12E-17	0	9.44E-19	0	4.73E-19	0	5.04E-19	0	1.36E-16	0	
Po-210	1.89E-18	0	2.76E-17	0	1.34E-17	0	6.51E-18	0	6.94E-19	0	9.20E-19	0	5.10E-17	0	
Ra-226	3.52E-13	15	5.72E-17	0	3.42E-17	0	1.37E-18	0	1.57E-18	0	2.45E-19	0	3.52E-13	15	
Th-230	4.06E-17	0	3.88E-16	0	6.00E-18	0	1.04E-19	0	7.10E-21	0	1.00E-18	0	4.36E-16	0	
U-234	9.87E-17	0	2.32E-14	1	2.16E-16	0	4.95E-18	0	1.59E-17	0	6.77E-18	0	2.35E-14	1	
U-235	3.24E-13	14	1.34E-15	0	1.42E-17	0	3.26E-19	0	1.05E-18	0	4.45E-19	0	3.26E-13	14	
U-238	1.63E-12	69	1.74E-14	1	2.40E-16	0	5.51E-18	0	1.77E-17	0	7.53E-18	0	1.65E-12	69	

Total	2.33E-12	98	4.27E-14	2	5.48E-16	0	2.00E-17	0	3.74E-17	0	1.75E-17	0	2.38E-12	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:34 Page 19
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESA.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 1000 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	3.52E-13	15	2.36E-14	1	0.00E+00	0	2.90E-16	0	1.39E-17	0	1.86E-17	0	9.42E-18	0	3.76E-13	16
U-235	3.49E-13	15	1.65E-15	0	0.00E+00	0	1.71E-17	0	6.52E-19	0	1.05E-18	0	5.07E-19	0	3.51E-13	15
U-238	1.63E-12	69	1.74E-14	1	0.00E+00	0	2.41E-16	0	5.53E-18	0	1.77E-17	0	7.54E-18	0	1.65E-12	69
Total	2.33E-12	98	4.27E-14	2	0.00E+00	0	5.48E-16	0	2.00E-17	0	3.74E-17	0	1.75E-17	0	2.38E-12	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Attachment D-14-8a. Offsite Receptor Location R0, Resident Farmer Tap Water Inputs, Chemical Risk, Alternative 1

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Variable	Farmer Contaminated Water Default Value	Site-Specific Value
BW_{far-a} (body weight - adult) kg	80	80
BW_{far-c} (body weight - child) kg	15	15
$CF_{far-beef}$ (contaminated intake fraction - beef) unitless	1	1
$CF_{far-dairy}$ (contaminated intake fraction - dairy) unitless	1	1
$CF_{far-produce}$ (contaminated intake fraction) unitless	1	1
ED_{far-a} (exposure duration - adult) y	34	34
ED_{far-c} (exposure duration - child) y	6	6
EF_{far-a} (exposure frequency - adult) day/y	350	350
EF_{far-c} (exposure frequency - child) day/y	350	350
$IFB_{far-adj}$ (age-adjusted beef intake rate) mg-year/kg-day	32091500	32091500
$IFD_{far-adj}$ (age-adjusted dairy intake rate) mg-year/kg-day	115213000	115213000
$IFF_{far-adj}$ (age-adjusted fruit intake rate) mg-year/kg-day	35833000	35833000
$IFV_{far-adj}$ (age-adjusted vegetable intake rate) mg-year/kg-day	24535875	24535875
IRB_{far-a} (beef intake rate - adult) mg/day	178000	178000
IRB_{far-c} (beef intake rate - child) mg/day	40100	40100
IRD_{far-a} (dairy intake rate - adult) mg/day	445600	445600
IRD_{far-c} (dairy intake rate - child) mg/day	349500	349500
IRF_{far-a} (fruit intake rate - adult) mg/day	176800	176800
IRF_{far-c} (fruit intake rate - child) mg/day	68100	68100
IRV_{far-a} (vegetable intake rate - adult) mg/day	125700	125700
IRV_{far-c} (vegetable intake rate - child) mg/day	41700	41700
LT (lifetime - resident) yr	70	70
$MLF_{pasture}$ (pasture plant mass loading factor) unitless	0.25	0.25
$MLF_{produce}$ (produce plant mass loading factor) unitless	0.0135	0.0135
F (irrigation period) unitless	0.25	0.25
I_f (interception fraction) unitless	0.42	0.42
I_r (Irrigation rate) L/m ² -day	3.62	3.62
λ_{HL} (soil leaching rate) 1/day	0.000027	0.000027
P (area density for root zone) kg/m ²	240	240
Q_{w-beef} (beef water intake rate) L/day	53	53
$Q_{w-dairy}$ (dairy water intake rate) L/day	92	92
T (translocation factor) unitless	1	1
t_b (long term deposition and buildup) day	10950	10950
t_v (above ground exposure time) day	60	60
t_w (weathering half-life) day	14	14
Y_v (plant yield - wet) kg/m ²	2	2

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Attachment D-14-8b. Resident Farmer Exposures to Groundwater Used as Tap Water at Offsite Receptor Location R0, Chemical Risk, Alternative 1

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	SF _o (mg/kg-day) ⁻¹	SF _o Ref	Soil-to-Plant Transfer Factor (kg-dry soil per kg-fresh plant)	Soil-to-Plant Transfer Factor (kg-dry soil per kg-dry plant)	Soil-to-Dairy Transfer Factor (day/kg)	Soil-to-Beef Transfer Factor (day/kg)	Tap Water Concentration (ug/L)	(L/kg)	(L/kg)
Nitrate (measured as nitrogen)	14797-55-8	No	No	1.60E+00	IC	-		-	-	-	-	2.08E+05	-	4.83E-01
<i>*Total Risk/HI</i>				-		-		-	-	-	-	-	-	-

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

Output generated 20MAY2023:22:08:06

Table continued

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Dose Conversion Factor (and Related) Parameter Summary
 Current Library: DCFPAK3.02
 Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)

DCSF	Pa-234	(Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT (11)
DCSF	Pa-234m	(Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT (12)
DCSF	Pb-210	(Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT (13)
DCSF	Pb-211	(Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT (14)
DCSF	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT (15)
DCSF	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT (16)
DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:				
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/28/2023 12:45	Page 3	
Parent Dose Report					
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1					
File : SHIPROCK_ALT1_OFFSITE RESB.ROF					

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D		6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D		2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1		2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210		1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D		3.528E-02	3.528E-02	DCF2 (6)

DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)
DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 4

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)

TF					
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF					
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF					
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF					
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF					
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				

TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				
TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)

TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210, fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210, crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)
TF				
TF	Ra-226+D, fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D, crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230, fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230, crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234, fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D, fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238, fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D, fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)

VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (8)
VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)

DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)

DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)
DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)

DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach(1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY(1)
LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-1.444E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-1.131E+02	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	3.761E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	4.081E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-1.417E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-1.104E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	4.178E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	4.498E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-2.750E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-1.750E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	4.359E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	5.359E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-1.667E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-6.670E+01	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	4.470E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	5.470E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-2.361E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.972E+02	6.562E+01	---	DWELLXY(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	3.900E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	4.387E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)

TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T (2)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+00	3.000E+00	---	T (3)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+01	6.000E+00	---	T (4)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+01	1.200E+01	---	T (5)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+02	3.000E+01	---	T (6)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+02	7.500E+01	---	T (7)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+03	1.750E+02	---	T (8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T (9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T (10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	7.340E-07	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV

PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)

AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF (3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG (3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF (3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN (3)
AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB (3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY (3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP (3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG (3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC (3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF (3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO (4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT (4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN (4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF (4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG (4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF (4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN (4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB (4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY (4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP (4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG (4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC (4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF (4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHODWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name

AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX
AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
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AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,1)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ (4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ (4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ (5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ (5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ (6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ (1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ (1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ (1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ (1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ (1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ (2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ (2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ (2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ (2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ (2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ (3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ (3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ (3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,2)

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Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)

AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)

AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)

AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ (2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ (2,2,5)
AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ (2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ (2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ (2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ (3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ (3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ (3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ (3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,5)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ (4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ (4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ (5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ (5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ (6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,5)
AIRT	Joint Frequency in ESE Sector				

AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)
AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ (6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,6)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ (1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ (1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ (1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ (1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ (1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ (2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ (2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ (2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ (2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ (3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ (3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ (3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ (4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ (4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ (5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ (5,4,7)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	AIRT	Joint Frequency in SSE Sector				
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
	AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
	AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
	AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
	AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)

AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,8)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ (5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ (1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ (1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ (1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ (1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ (1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ (2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ (2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ (2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ (2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ (2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ (3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ (3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ (3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ (3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,9)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
AIRT	Joint Frequency in S Sector				

AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)

AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)

AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)
AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0		User		RESRAD	
Menu	Parameter	Input	Default	computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				

AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)
AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)

AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)

AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)

AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,15)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				

AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ (5,4,16)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	2.088E+02	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	2.548E+02	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
	0 = (total porosity + distribution coefficient*dry bulk density) / total porosity				

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H (1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ (1)

USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ (1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWL (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWL (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR(1)
WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACTCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)

LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI(1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI(1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI(2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI(2,2)

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Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	7.340E-07	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	7.340E-07	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)

SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA (6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA (7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA (8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA (9)
SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA (10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA (11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA (12)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	4.975E+01	1.325E+01	---	RAD_SHAPE (13)
SEXT	Outer annular radius (m), ring 14:	9.950E+01	2.650E+01	---	RAD_SHAPE (14)
SEXT	Outer annular radius (m), ring 15:	1.492E+02	3.975E+01	---	RAD_SHAPE (15)
SEXT	Outer annular radius (m), ring 16:	1.990E+02	5.300E+01	---	RAD_SHAPE (16)
SEXT	Outer annular radius (m), ring 17:	2.488E+02	6.625E+01	---	RAD_SHAPE (17)
SEXT	Outer annular radius (m), ring 18:	2.985E+02	7.950E+01	---	RAD_SHAPE (18)
SEXT	Outer annular radius (m), ring 19:	3.482E+02	9.275E+01	---	RAD_SHAPE (19)
SEXT	Outer annular radius (m), ring 20:	3.980E+02	1.060E+02	---	RAD_SHAPE (20)
SEXT	Outer annular radius (m), ring 21:	4.478E+02	1.192E+02	---	RAD_SHAPE (21)
SEXT	Outer annular radius (m), ring 22:	4.975E+02	1.325E+02	---	RAD_SHAPE (22)
SEXT	Outer annular radius (m), ring 23:	5.472E+02	1.458E+02	---	RAD_SHAPE (23)
SEXT	Outer annular radius (m), ring 24:	5.970E+02	1.590E+02	---	RAD_SHAPE (24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA (13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA (14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA (15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA (16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA (17)
SEXT	Ring 18	5.400E-05	2.400E-01	---	FRACA (18)
SEXT	Ring 19	2.500E-02	2.000E-01	---	FRACA (19)
SEXT	Ring 20	6.000E-02	1.700E-01	---	FRACA (20)
SEXT	Ring 21	8.500E-02	1.500E-01	---	FRACA (21)
SEXT	Ring 22	9.200E-02	1.300E-01	---	FRACA (22)
SEXT	Ring 23	4.800E-02	1.200E-01	---	FRACA (23)
SEXT	Ring 24	1.300E-02	5.200E-02	---	FRACA (24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	2.222E+02	2.222E+02	---	RAD_SHAPE (25)
SEXT	Outer annular radius (m), ring 26:	2.493E+02	2.493E+02	---	RAD_SHAPE (26)
SEXT	Outer annular radius (m), ring 27:	2.765E+02	2.765E+02	---	RAD_SHAPE (27)
SEXT	Outer annular radius (m), ring 28:	3.036E+02	3.036E+02	---	RAD_SHAPE (28)
SEXT	Outer annular radius (m), ring 29:	3.307E+02	3.307E+02	---	RAD_SHAPE (29)

SEXT	Outer annular radius (m), ring 30:	3.579E+02	3.579E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	3.850E+02	3.850E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	4.127E+02	4.127E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	4.392E+02	4.392E+02	---	RAD_SHAPE(33)
SEXT	Outer annular radius (m), ring 34:	4.658E+02	4.658E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	4.923E+02	4.923E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	5.188E+02	5.188E+02	---	RAD_SHAPE(36)

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Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.811E-02	1.811E-02	---	FRACA(26)
SEXT	Ring 27	4.738E-02	4.738E-02	---	FRACA(27)
SEXT	Ring 28	6.935E-02	6.935E-02	---	FRACA(28)
SEXT	Ring 29	8.669E-02	8.669E-02	---	FRACA(29)
SEXT	Ring 30	1.008E-01	1.008E-01	---	FRACA(30)
SEXT	Ring 31	1.126E-01	1.126E-01	---	FRACA(31)
SEXT	Ring 32	1.104E-01	1.104E-01	---	FRACA(32)
SEXT	Ring 33	8.431E-02	8.431E-02	---	FRACA(33)
SEXT	Ring 34	5.247E-02	5.247E-02	---	FRACA(34)
SEXT	Ring 35	2.833E-02	2.833E-02	---	FRACA(35)
SEXT	Ring 36	8.706E-03	8.706E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	2.560E+02	2.560E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	2.807E+02	2.807E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	3.053E+02	3.053E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	3.300E+02	3.300E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	3.547E+02	3.547E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	3.794E+02	3.794E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	4.040E+02	4.040E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	4.279E+02	4.279E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	4.517E+02	4.517E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	4.843E+02	4.843E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	5.168E+02	5.168E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	5.493E+02	5.493E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.564E-02	1.564E-02	---	FRACA(38)
SEXT	Ring 39	4.147E-02	4.147E-02	---	FRACA(39)
SEXT	Ring 40	6.123E-02	6.123E-02	---	FRACA(40)
SEXT	Ring 41	7.713E-02	7.713E-02	---	FRACA(41)
SEXT	Ring 42	9.034E-02	9.034E-02	---	FRACA(42)

SEXT	Ring 43	1.015E-01	1.015E-01	---	FRACA (43)
SEXT	Ring 44	1.015E-01	1.015E-01	---	FRACA (44)
SEXT	Ring 45	9.280E-02	9.280E-02	---	FRACA (45)
SEXT	Ring 46	6.843E-02	6.843E-02	---	FRACA (46)
SEXT	Ring 47	3.496E-02	3.496E-02	---	FRACA (47)
SEXT	Ring 48	1.047E-02	1.047E-02	---	FRACA (48)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 37

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	3.552E+02	3.552E+02	---	RAD_SHAPE (49)
SEXT	Outer annular radius (m), ring 50:	3.819E+02	3.819E+02	---	RAD_SHAPE (50)
SEXT	Outer annular radius (m), ring 51:	4.086E+02	4.086E+02	---	RAD_SHAPE (51)
SEXT	Outer annular radius (m), ring 52:	4.353E+02	4.353E+02	---	RAD_SHAPE (52)
SEXT	Outer annular radius (m), ring 53:	4.620E+02	4.620E+02	---	RAD_SHAPE (53)
SEXT	Outer annular radius (m), ring 54:	4.887E+02	4.887E+02	---	RAD_SHAPE (54)
SEXT	Outer annular radius (m), ring 55:	5.154E+02	5.154E+02	---	RAD_SHAPE (55)
SEXT	Outer annular radius (m), ring 56:	5.355E+02	5.355E+02	---	RAD_SHAPE (56)
SEXT	Outer annular radius (m), ring 57:	5.648E+02	5.648E+02	---	RAD_SHAPE (57)
SEXT	Outer annular radius (m), ring 58:	5.942E+02	5.942E+02	---	RAD_SHAPE (58)
SEXT	Outer annular radius (m), ring 59:	6.235E+02	6.235E+02	---	RAD_SHAPE (59)
SEXT	Outer annular radius (m), ring 60:	6.528E+02	6.528E+02	---	RAD_SHAPE (60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA (49)
SEXT	Ring 50	1.133E-02	1.133E-02	---	FRACA (50)
SEXT	Ring 51	3.112E-02	3.112E-02	---	FRACA (51)
SEXT	Ring 52	4.751E-02	4.751E-02	---	FRACA (52)
SEXT	Ring 53	6.140E-02	6.140E-02	---	FRACA (53)
SEXT	Ring 54	7.336E-02	7.336E-02	---	FRACA (54)
SEXT	Ring 55	8.381E-02	8.381E-02	---	FRACA (55)
SEXT	Ring 56	8.543E-02	8.543E-02	---	FRACA (56)
SEXT	Ring 57	6.845E-02	6.845E-02	---	FRACA (57)
SEXT	Ring 58	4.410E-02	4.410E-02	---	FRACA (58)
SEXT	Ring 59	2.428E-02	2.428E-02	---	FRACA (59)
SEXT	Ring 60	7.555E-03	7.555E-03	---	FRACA (60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	3.089E+02	3.089E+02	---	RAD_SHAPE (61)
SEXT	Outer annular radius (m), ring 62:	3.341E+02	3.341E+02	---	RAD_SHAPE (62)
SEXT	Outer annular radius (m), ring 63:	3.593E+02	3.593E+02	---	RAD_SHAPE (63)
SEXT	Outer annular radius (m), ring 64:	3.845E+02	3.845E+02	---	RAD_SHAPE (64)
SEXT	Outer annular radius (m), ring 65:	4.097E+02	4.097E+02	---	RAD_SHAPE (65)
SEXT	Outer annular radius (m), ring 66:	4.350E+02	4.350E+02	---	RAD_SHAPE (66)

SEXT	Outer annular radius (m), ring 67:	4.601E+02	4.601E+02	---	RAD_SHAPE (67)
SEXT	Outer annular radius (m), ring 68:	4.853E+02	4.853E+02	---	RAD_SHAPE (68)
SEXT	Outer annular radius (m), ring 69:	5.105E+02	5.105E+02	---	RAD_SHAPE (69)
SEXT	Outer annular radius (m), ring 70:	5.388E+02	5.388E+02	---	RAD_SHAPE (70)
SEXT	Outer annular radius (m), ring 71:	5.670E+02	5.670E+02	---	RAD_SHAPE (71)
SEXT	Outer annular radius (m), ring 72:	5.953E+02	5.953E+02	---	RAD_SHAPE (72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.542E-02	1.542E-02	---	FRACA (62)
SEXT	Ring 63	4.064E-02	4.064E-02	---	FRACA (63)
SEXT	Ring 64	5.942E-02	5.942E-02	---	FRACA (64)
SEXT	Ring 65	7.447E-02	7.447E-02	---	FRACA (65)
SEXT	Ring 66	8.699E-02	8.699E-02	---	FRACA (66)
SEXT	Ring 67	8.885E-02	8.885E-02	---	FRACA (67)
SEXT	Ring 68	8.225E-02	8.225E-02	---	FRACA (68)
SEXT	Ring 69	7.671E-02	7.671E-02	---	FRACA (69)
SEXT	Ring 70	5.715E-02	5.715E-02	---	FRACA (70)
SEXT	Ring 71	2.925E-02	2.925E-02	---	FRACA (71)
SEXT	Ring 72	8.839E-03	8.839E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM
RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK(1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK(2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT(1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT(2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT(3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT(4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK(1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK(2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT(1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT(2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT(3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT(4)

Summary of Pathway Selections

Pathway	User Selection
---------	----------------

1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 40
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area: 44521.00 square meters	U-234	1.485E+01
Thickness: 2.00 meters	U-235	9.550E-01
Cover Depth: 0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.375E-03	1.374E-03	1.372E-03	1.365E-03	1.345E-03	1.278E-03	1.114E-03	7.597E-04
M(t):	5.500E-05	5.496E-05	5.488E-05	5.459E-05	5.378E-05	5.111E-05	4.455E-05	3.039E-05

0Maximum TDOSE(t): 1.375E-03 mrem/yr at t = 0 years

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 41
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	6.95E-08	0	3.04E-07	0	0.00E+00	0	2.88E-09	0	4.10E-11	0	2.11E-10	0	9.99E-13	0	3.77E-07	0
U-235	2.13E-04	16	1.76E-08	0	0.00E+00	0	1.76E-10	0	2.51E-12	0	1.29E-11	0	6.10E-14	0	2.13E-04	16
U-238	1.16E-03	84	2.29E-07	0	0.00E+00	0	2.46E-09	0	3.50E-11	0	1.80E-10	0	8.52E-13	0	1.16E-03	84
Total	1.37E-03	100	5.51E-07	0	0.00E+00	0	5.51E-09	0	7.85E-11	0	4.03E-10	0	1.91E-12	0	1.38E-03	100

0*Sum of dose from all releases and from primary contamination.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	6.98E-08	0	3.04E-07	0	0.00E+00	0	2.89E-09	0	4.15E-11	0	2.12E-10	0	2.98E-12	0	3.77E-07	0
U-235	2.13E-04	16	1.76E-08	0	0.00E+00	0	1.77E-10	0	2.54E-12	0	1.29E-11	0	1.82E-13	0	2.13E-04	16
U-238	1.16E-03	84	2.29E-07	0	0.00E+00	0	2.47E-09	0	3.54E-11	0	1.81E-10	0	2.54E-12	0	1.16E-03	84
Total	1.37E-03	100	5.50E-07	0	0.00E+00	0	5.54E-09	0	7.94E-11	0	4.05E-10	0	5.70E-12	0	1.37E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

From releases to ground water and to surface water

Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
--------	------	-------	-------	------	------	------	-------

Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

Radio-Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways*
U-234	7.16E-08	3.03E-07	0.00E+00	2.92E-09	4.24E-11	2.14E-10	6.84E-12	3.78E-07
U-235	2.13E-04	1.76E-08	0.00E+00	1.78E-10	2.62E-12	1.31E-11	4.18E-13	2.13E-04
U-238	1.16E-03	2.29E-07	0.00E+00	2.49E-09	3.62E-11	1.83E-10	5.84E-12	1.16E-03
Total	1.37E-03	5.50E-07	0.00E+00	5.58E-09	8.12E-11	4.10E-10	1.31E-11	1.37E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Radio-Nuclide	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
U-234	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-235	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-238	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Radio-Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways*
U-234	8.95E-08	3.02E-07	0.00E+00	3.00E-09	4.54E-11	2.22E-10	1.95E-11	3.95E-07
U-235	2.12E-04	1.76E-08	0.00E+00	1.83E-10	2.88E-12	1.35E-11	1.19E-12	2.12E-04
U-238	1.15E-03	2.27E-07	0.00E+00	2.56E-09	3.88E-11	1.89E-10	1.66E-11	1.15E-03

0*Sum of dose from all releases and from primary contamination.

$T_{1/2}$ Limit = 30 days

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESB.ROF

in mrem/yr and as a Percentage of Total Dose at t = 30 years

From releases to ground water and to surface water

0

0

in mrem/yr and as a Percentage of Total Dose at t = 30 years

0

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0*Sum of dose from all releases and from primary contamination.

$T_{1/2}$ Limit = 30 days

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESB.ROF

in mrem/yr and as a Percentage of Total Dose at $t = 100$ years

From releases to ground water and to surface water

0

[illegible]

Total 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 100 years

0		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234		1.84E-06	0	2.85E-07	0	0.00E+00	0	3.42E-09	0	6.41E-11	0	2.63E-10	0	1.01E-10	0	2.13E-06	0
U-235		1.99E-04	16	1.78E-08	0	0.00E+00	0	2.18E-10	0	5.51E-12	0	1.61E-11	0	6.32E-12	0	1.99E-04	16
U-238		1.08E-03	84	2.12E-07	0	0.00E+00	0	2.91E-09	0	5.43E-11	0	2.25E-10	0	8.57E-11	0	1.08E-03	84
Total		1.28E-03	100	5.15E-07	0	0.00E+00	0	6.54E-09	0	1.24E-10	0	5.04E-10	0	1.93E-10	0	1.28E-03	100

0*Sum of dose from all releases and from primary contamination.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

0		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)														All Pathways*	
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil			
Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	
U-234	1.42E-05	1	2.50E-07	0	0.00E+00	0	3.22E-09	0	6.77E-11	0	2.47E-10	0	1.18E-10	0	1.44E-05	1	
U-235	1.74E-04	16	1.80E-08	0	0.00E+00	0	2.21E-10	0	8.60E-12	0	1.50E-11	0	7.56E-12	0	1.74E-04	16	
U-238	9.25E-04	83	1.83E-07	0	0.00E+00	0	2.66E-09	0	5.24E-11	0	2.09E-10	0	9.60E-11	0	9.26E-04	83	
Total	1.11E-03	100	4.51E-07	0	0.00E+00	0	6.10E-09	0	1.29E-10	0	4.70E-10	0	2.22E-10	0	1.11E-03	100	

0*Sum of dose from all releases and from primary contamination.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years																	
Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																	
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*		
0	Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
	U-234	1.06E-04	14	1.64E-07	0	0.00E+00	0	2.66E-09	0	1.04E-10	0	1.70E-10	0	1.19E-10	0	1.07E-04	14
	U-235	1.08E-04	14	1.63E-08	0	0.00E+00	0	1.75E-10	0	1.18E-11	0	8.90E-12	0	5.50E-12	0	1.08E-04	14
	U-238	5.45E-04	72	1.08E-07	0	0.00E+00	0	1.58E-09	0	3.12E-11	0	1.24E-10	0	5.76E-11	0	5.45E-04	72
	Total	7.59E-04	100	2.88E-07	0	0.00E+00	0	4.41E-09	0	1.47E-10	0	3.03E-10	0	1.82E-10	0	7.60E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Dose/Source Ratios Summed Over All Pathways Parent and Progeny Principal Radionuclide Contributions Indicated												
Parent (i)	Product (j)	Parent and Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g)									
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03		
U-234	U-234	1.000E+00	2.536E-08	2.534E-08	2.530E-08	2.518E-08	2.482E-08	2.357E-08	2.026E-08	1.191E-08		
U-234	Th-230	1.000E+00	1.642E-12	4.923E-12	1.148E-11	3.435E-11	9.902E-11	3.178E-10	8.823E-10	2.299E-09		
U-234	Ra-226+D	1.000E+00	4.660E-12	2.981E-11	1.549E-10	1.374E-09	1.145E-08	1.193E-07	9.514E-07	7.165E-06		
U-234	Pb-210+D	1.000E+00	1.557E-17	2.000E-16	2.202E-15	5.448E-14	1.142E-12	2.615E-11	3.040E-10	2.656E-09		
U-234	Po-210	1.000E+00	9.643E-20	1.940E-18	3.038E-17	9.811E-16	2.290E-14	5.575E-13	6.754E-12	6.084E-11		
U-234	ΣDSR(j)		2.536E-08	2.537E-08	2.547E-08	2.658E-08	3.636E-08	1.432E-07	9.728E-07	7.182E-06		
U-234	U-234	1.339E-06	3.395E-14	3.393E-14	3.388E-14	3.371E-14	3.323E-14	3.155E-14	2.713E-14	1.595E-14		
U-234	Th-230	1.339E-06	2.198E-18	6.592E-18	1.537E-17	4.599E-17	1.326E-16	4.255E-16	1.181E-15	3.078E-15		
U-234	Ra-226+D	1.339E-06	6.240E-18	3.991E-17	2.075E-16	1.840E-15	1.532E-14	1.598E-13	1.274E-12	9.594E-12		
U-234	Pb-210+D1	1.339E-06	1.086E-22	1.395E-21	1.536E-20	3.800E-19	7.962E-18	1.822E-16	2.115E-15	1.846E-14		
U-234	ΣDSR(j)		3.396E-14	3.397E-14	3.410E-14	3.560E-14	4.869E-14	1.919E-13	1.304E-12	9.632E-12		
U-235+D	U-235+D	1.000E+00	2.235E-04	2.233E-04	2.230E-04	2.218E-04	2.185E-04	2.072E-04	1.781E-04	1.049E-04		
U-235+D	Pa-231	1.000E+00	6.007E-10	1.801E-09	4.196E-09	1.252E-08	3.581E-08	1.118E-07	2.869E-07	5.585E-07		

U-235+D	Ac-227+D	1.000E+00	9.948E-11	6.304E-10	3.208E-09	2.641E-08	1.801E-07	1.080E-06	3.513E-06	7.376E-06
U-235	ΣDSR(j)		2.235E-04	2.233E-04	2.230E-04	2.218E-04	2.187E-04	2.084E-04	1.819E-04	1.129E-04
0U-238	U-238	5.450E-07	4.068E-14	4.065E-14	4.059E-14	4.038E-14	3.978E-14	3.775E-14	3.246E-14	1.912E-14
0U-238+D	U-238+D	1.000E+00	8.878E-05	8.871E-05	8.858E-05	8.811E-05	8.679E-05	8.232E-05	7.076E-05	4.168E-05
U-238+D	U-234	1.000E+00	3.579E-14	1.073E-13	2.500E-13	7.464E-13	2.137E-12	6.688E-12	1.720E-11	3.370E-11
U-238+D	Th-230	1.000E+00	1.726E-18	1.104E-17	5.739E-17	5.093E-16	4.248E-15	4.452E-14	3.602E-13	2.844E-12
U-238+D	Ra-226+D	1.000E+00	3.620E-18	4.685E-17	5.229E-16	1.362E-14	3.282E-13	1.124E-11	2.654E-10	6.405E-09
U-238+D	Pb-210+D	1.000E+00	8.984E-24	2.489E-22	5.706E-21	4.122E-19	2.564E-17	2.067E-15	7.767E-14	2.307E-12
U-238+D	Po-210	1.000E+00	6.160E-26	2.174E-24	7.180E-23	7.091E-21	5.053E-19	4.378E-17	1.717E-15	5.251E-14
U-238	ΣDSR(j)		8.878E-05	8.871E-05	8.858E-05	8.811E-05	8.679E-05	8.232E-05	7.076E-05	4.169E-05
0U-238+D	U-238+D	1.339E-06	1.189E-10	1.188E-10	1.186E-10	1.180E-10	1.162E-10	1.102E-10	9.475E-11	5.581E-11
U-238+D	U-234	1.339E-06	4.792E-20	1.437E-19	3.348E-19	9.994E-19	2.861E-18	8.955E-18	2.303E-17	4.512E-17
U-238+D	Th-230	1.339E-06	2.311E-24	1.478E-23	7.684E-23	6.819E-22	5.688E-21	5.962E-20	4.824E-19	3.808E-18
U-238+D	Ra-226+D	1.339E-06	4.877E-24	6.274E-23	7.002E-22	1.824E-20	4.395E-19	1.504E-17	3.553E-16	8.577E-15
U-238+D	Pb-210+D1	1.339E-06	1.007E-28	1.816E-27	3.981E-26	2.875E-24	1.788E-22	1.440E-20	5.405E-19	1.603E-17
U-238	ΣDSR(j)		1.189E-10	1.188E-10	1.186E-10	1.180E-10	1.162E-10	1.102E-10	9.475E-11	5.582E-11

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	9.857E+08	9.853E+08	9.816E+08	9.404E+08	6.876E+08	1.745E+08	2.570E+07	3.481E+06
U-235	1.119E+05	1.120E+05	1.121E+05	1.127E+05	1.143E+05	1.200E+05	1.374E+05	2.215E+05
U-238	2.816E+05	2.818E+05	2.822E+05	2.837E+05	2.881E+05	3.037E+05	*3.361E+05	*3.361E+05

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.485E+01	1001	7.187E-06	3.478E+06	2.536E-08	9.857E+08
U-235	9.550E-01	0	2.235E-04	1.119E+05	2.235E-04	1.119E+05
U-238	1.308E+01	0	8.878E-05	2.816E+05	8.878E-05	2.816E+05

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00		3.765E-07	3.763E-07	3.757E-07	3.739E-07	3.685E-07	3.499E-07	3.009E-07	1.769E-07
U-234	U-234	1.339E-06		5.042E-13	5.038E-13	5.031E-13	5.006E-13	4.934E-13	4.686E-13	4.029E-13	2.369E-13
U-234	U-238	1.000E+00		4.681E-13	1.404E-12	3.270E-12	9.762E-12	2.795E-11	8.747E-11	2.250E-10	4.408E-10
U-234	ΣDOSE(j):			3.765E-07	3.763E-07	3.757E-07	3.739E-07	3.685E-07	3.500E-07	3.011E-07	1.773E-07
0Th-230	U-234	1.000E+00		2.438E-11	7.311E-11	1.705E-10	5.100E-10	1.470E-09	4.719E-09	1.310E-08	3.414E-08
Th-230	U-238	1.000E+00		2.257E-17	1.444E-16	7.506E-16	6.661E-15	5.556E-14	5.824E-13	4.712E-12	3.720E-11
Th-230	ΣDOSE(j):			2.438E-11	7.311E-11	1.705E-10	5.100E-10	1.470E-09	4.720E-09	1.311E-08	3.417E-08
0Ra-226	U-234	1.000E+00		6.920E-11	4.426E-10	2.301E-09	2.041E-08	1.700E-07	1.772E-06	1.413E-05	1.064E-04
Ra-226	U-238	1.000E+00		4.735E-17	6.128E-16	6.840E-15	1.781E-13	4.293E-12	1.470E-10	3.471E-09	8.378E-08
Ra-226	ΣDOSE(j):			6.920E-11	4.426E-10	2.301E-09	2.041E-08	1.700E-07	1.772E-06	1.413E-05	1.065E-04
0Pb-210	U-234	1.000E+00		2.313E-16	2.970E-15	3.270E-14	8.091E-13	1.696E-11	3.883E-10	4.515E-09	3.945E-08
Pb-210	U-238	1.000E+00		1.175E-22	3.256E-21	7.463E-20	5.391E-18	3.354E-16	2.704E-14	1.016E-12	3.017E-11
Pb-210	ΣDOSE(j):			2.313E-16	2.970E-15	3.270E-14	8.091E-13	1.696E-11	3.884E-10	4.516E-09	3.948E-08
0Po-210	U-234	1.000E+00		1.432E-18	2.881E-17	4.512E-16	1.457E-14	3.401E-13	8.279E-12	1.003E-10	9.035E-10
Po-210	U-238	1.000E+00		8.057E-25	2.844E-23	9.392E-22	9.275E-20	6.609E-18	5.726E-16	2.245E-14	6.868E-13
Po-210	ΣDOSE(j):			1.432E-18	2.881E-17	4.512E-16	1.457E-14	3.401E-13	8.279E-12	1.003E-10	9.042E-10
0Th-230	U-234	1.339E-06		3.264E-17	9.789E-17	2.282E-16	6.829E-16	1.969E-15	6.319E-15	1.754E-14	4.571E-14
Th-230	U-238	1.339E-06		3.022E-23	1.933E-22	1.005E-21	8.919E-21	7.440E-20	7.798E-19	6.309E-18	4.981E-17
Th-230	ΣDOSE(j):			3.264E-17	9.789E-17	2.282E-16	6.829E-16	1.969E-15	6.320E-15	1.755E-14	4.576E-14
0Ra-226	U-234	1.339E-06		9.266E-17	5.927E-16	3.081E-15	2.733E-14	2.276E-13	2.373E-12	1.892E-11	1.425E-10
Ra-226	U-238	1.339E-06		6.380E-23	8.207E-22	9.158E-21	2.385E-19	5.748E-18	1.968E-16	4.647E-15	1.122E-13
Ra-226	ΣDOSE(j):			9.266E-17	5.927E-16	3.081E-15	2.733E-14	2.276E-13	2.373E-12	1.892E-11	1.426E-10
0Pb-210	U-234	1.339E-06		1.613E-21	2.072E-20	2.281E-19	5.643E-18	1.182E-16	2.705E-15	3.141E-14	2.742E-13
Pb-210	U-238	1.339E-06		1.318E-27	2.375E-26	5.207E-25	3.760E-23	2.339E-21	1.884E-19	7.069E-18	2.097E-16
Pb-210	ΣDOSE(j):			1.613E-21	2.072E-20	2.281E-19	5.643E-18	1.182E-16	2.705E-15	3.142E-14	2.744E-13
0U-235	U-235	1.000E+00		2.134E-04	2.133E-04	2.129E-04	2.118E-04	2.086E-04	1.979E-04	1.701E-04	1.002E-04
0Pa-231	U-235	1.000E+00		5.736E-10	1.720E-09	4.007E-09	1.196E-08	3.420E-08	1.068E-07	2.740E-07	5.334E-07
0Ac-227	U-235	1.000E+00		9.501E-11	6.020E-10	3.064E-09	2.522E-08	1.720E-07	1.032E-06	3.355E-06	7.044E-06
0U-238	U-238	5.450E-07		5.321E-13	5.317E-13	5.309E-13	5.282E-13	5.204E-13	4.938E-13	4.246E-13	2.501E-13
U-238	U-238	1.000E+00		1.161E-03	1.160E-03	1.159E-03	1.153E-03	1.135E-03	1.077E-03	9.256E-04	5.452E-04
U-238	ΣDOSE(j):			1.161E-03	1.160E-03	1.159E-03	1.153E-03	1.135E-03	1.077E-03	9.256E-04	5.452E-04
0U-238	U-238	1.339E-06		1.555E-09	1.554E-09	1.551E-09	1.543E-09	1.520E-09	1.442E-09	1.239E-09	7.300E-10
1RESRAD-OFFSITE, Version 4.0				T½ Limit = 30 days				03/28/2023 12:45 Page 52			
Parent Dose Report											
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1											
File : SHIPROCK ALT1 OFFSITE RESB.ROF											

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated											
ONuclide (j)	Parent (i)	THF(i)	t=	DOSE(j,t), mrem/yr							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-238	1.339E-06		6.268E-19	1.879E-18	4.379E-18	1.307E-17	3.743E-17	1.171E-16	3.012E-16	5.902E-16

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 53
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Individual Nuclide Soil Concentration Parent Nuclide and Thread Fraction Indicated										
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00	1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.376E+01	1.183E+01	6.952E+00
U-234	U-234	1.339E-06	1.988E-05	1.987E-05	1.984E-05	1.973E-05	1.944E-05	1.843E-05	1.584E-05	9.309E-06
U-234	U-238	1.000E+00	0.000E+00	3.690E-05	1.105E-04	3.665E-04	1.083E-03	3.424E-03	8.827E-03	1.731E-02
U-234	ΣS(j):		1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.377E+01	1.184E+01	6.970E+00
0Th-230	U-234	1.000E+00	0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.658E-02	9.516E-02
Th-230	U-238	1.000E+00	0.000E+00	1.715E-10	1.531E-09	1.690E-08	1.505E-07	1.614E-06	1.314E-05	1.038E-04
Th-230	ΣS(j):		0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.659E-02	9.527E-02
0Ra-226	U-234	1.000E+00	0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03	1.691E-02
Ra-226	U-238	1.000E+00	0.000E+00	2.540E-14	6.675E-13	2.441E-11	6.499E-10	2.304E-08	5.496E-07	1.331E-05
Ra-226	ΣS(j):		0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03	1.693E-02
0Pb-210	U-234	1.000E+00	0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.822E-03	1.594E-02
Pb-210	U-238	1.000E+00	0.000E+00	2.104E-16	1.566E-14	1.797E-12	1.278E-10	1.078E-08	4.094E-07	1.219E-05
Pb-210	ΣS(j):		0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.823E-03	1.595E-02
0Po-210	U-234	1.000E+00	0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03	1.590E-02
Po-210	U-238	1.000E+00	0.000E+00	6.291E-17	8.792E-15	1.464E-12	1.191E-10	1.055E-08	4.063E-07	1.215E-05
Po-210	ΣS(j):		0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03	1.591E-02
0Th-230	U-234	1.339E-06	0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.422E-09	1.760E-08	4.898E-08	1.274E-07
Th-230	U-238	1.339E-06	0.000E+00	2.296E-16	2.049E-15	2.263E-14	2.015E-13	2.161E-12	1.759E-11	1.390E-10
Th-230	ΣS(j):		0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.423E-09	1.760E-08	4.900E-08	1.276E-07
0Ra-226	U-234	1.339E-06	0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.000E-09	2.265E-08
Ra-226	U-238	1.339E-06	0.000E+00	3.411E-20	8.938E-19	3.269E-17	8.702E-16	3.085E-14	7.359E-13	1.783E-11
Ra-226	ΣS(j):		0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.001E-09	2.267E-08
0Pb-210	U-234	1.339E-06	0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09	2.135E-08
Pb-210	U-238	1.339E-06	0.000E+00	3.417E-22	2.096E-20	2.406E-18	1.711E-16	1.443E-14	5.482E-13	1.632E-11
Pb-210	ΣS(j):		0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09	2.136E-08
0U-235	U-235	1.000E+00	9.550E-01	9.543E-01	9.528E-01	9.478E-01	9.336E-01	8.855E-01	7.612E-01	4.484E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.019E-05	6.048E-05	2.005E-04	5.924E-04	1.871E-03	4.816E-03	9.387E-03
0Ac-227	U-235	1.000E+00	0.000E+00	3.211E-07	2.804E-06	2.870E-05	2.088E-04	1.280E-03	4.183E-03	8.794E-03
0U-238	U-238	5.450E-07	7.129E-06	7.123E-06	7.112E-06	7.075E-06	6.969E-06	6.609E-06	5.682E-06	3.347E-06
U-238	U-238	1.000E+00	1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01	6.141E+00
U-238	ΣS(j):		1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01	6.141E+00
0U-238	U-238	1.339E-06	1.751E-05	1.750E-05	1.747E-05	1.738E-05	1.712E-05	1.624E-05	1.396E-05	8.223E-06

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 54
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-238	1.339E-06		0.000E+00	4.941E-11	1.480E-10	4.908E-10	1.450E-09	4.584E-09	1.182E-08	2.318E-08

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 55

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Run Time Information

ResOCalc.EXE execution began at 12:45 on 03/28/2023

ResOCalc.EXE execution ended at 12:46 on 03/28/2023

ResOCalc.EXE execution time 22.812 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years	2
Time = 1.000E+00 years	3
Time = 3.000E+00 years	4
Time = 1.000E+01 years	5
Time = 3.000E+01 years	6
Time = 1.000E+02 years	7
Time = 3.000E+02 years	8
Time = 1.000E+03 years	9

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-11	4.5E-14	0.0E+00	2.0E-16	6.0E-18	4.9E-19	1.2E-19	9.5E-11
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-10	5.1E-12	0.0E+00	1.9E-14	3.7E-15	1.7E-17	9.8E-18	5.7E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-16	1.2E-18	0.0E+00	2.6E-19	8.5E-21	9.6E-21	1.9E-22	2.3E-16
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-18	2.6E-19	0.0E+00	1.3E-19	1.8E-20	5.5E-21	1.1E-22	1.4E-18
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-11	2.3E-16	0.0E+00	1.3E-17	4.5E-19	1.5E-18	7.4E-21	6.9E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-12	1.5E-11	0.0E+00	5.7E-14	2.9E-16	5.2E-17	3.0E-17	2.4E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-08	3.0E-07	0.0E+00	2.9E-09	4.1E-11	2.1E-10	1.0E-12	3.8E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	1.8E-08	0.0E+00	1.8E-10	2.5E-12	1.3E-11	6.1E-14	2.1E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	2.3E-07	0.0E+00	2.5E-09	3.5E-11	1.8E-10	8.5E-13	1.2E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	5.5E-07	0.0E+00	5.5E-09	7.9E-11	4.0E-10	1.9E-12	1.4E-03

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-10	2.9E-13	0.0E+00	1.3E-15	2.0E-17	3.1E-18	1.5E-18	6.0E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-09	1.5E-11	0.0E+00	5.8E-14	1.2E-14	4.3E-17	6.2E-17	1.7E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-15	1.5E-17	0.0E+00	3.4E-18	1.2E-19	1.2E-19	4.1E-21	3.0E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-17	5.2E-18	0.0E+00	2.7E-18	4.7E-19	1.1E-19	3.4E-21	2.9E-17
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-10	1.5E-15	0.0E+00	8.7E-17	3.3E-18	9.8E-18	9.1E-20	4.4E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-11	4.5E-11	0.0E+00	1.7E-13	7.9E-16	1.3E-16	1.9E-16	7.3E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-08	3.0E-07	0.0E+00	2.9E-09	4.1E-11	2.1E-10	3.0E-12	3.8E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	1.8E-08	0.0E+00	1.8E-10	2.5E-12	1.3E-11	1.8E-13	2.1E-04

U-238 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.2E-03 2.3E-07 0.0E+00 2.5E-09 3.5E-11 1.8E-10 2.5E-12 1.2E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.4E-03 5.5E-07 0.0E+00 5.5E-09 7.9E-11 4.1E-10 5.7E-12 1.4E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 4

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 3 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-09	1.5E-12	0.0E+00	6.6E-15	5.1E-17	1.6E-17	1.6E-17	3.1E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-09	3.5E-11	0.0E+00	1.4E-13	2.9E-14	9.1E-17	3.2E-16	4.0E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-14	1.7E-16	0.0E+00	3.9E-17	1.3E-18	1.4E-18	9.1E-20	3.3E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-16	8.2E-17	0.0E+00	4.2E-17	8.0E-18	1.8E-18	1.0E-19	4.5E-16
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-09	7.6E-15	0.0E+00	5.2E-16	2.0E-17	5.3E-17	9.9E-19	2.3E-09
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-11	1.1E-10	0.0E+00	4.0E-13	1.8E-15	2.7E-16	9.8E-16	1.7E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-08	3.0E-07	0.0E+00	2.9E-09	4.2E-11	2.1E-10	6.8E-12	3.8E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	1.8E-08	0.0E+00	1.8E-10	2.6E-12	1.3E-11	4.2E-13	2.1E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	2.3E-07	0.0E+00	2.5E-09	3.6E-11	1.8E-10	5.8E-12	1.2E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	5.5E-07	0.0E+00	5.6E-09	8.1E-11	4.1E-10	1.3E-11	1.4E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 5

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 10 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-08	1.2E-11	0.0E+00	5.6E-14	2.1E-16	1.4E-16	3.5E-16	2.5E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-08	1.1E-10	0.0E+00	4.7E-13	9.9E-14	2.7E-16	2.7E-15	1.2E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-13	4.1E-15	0.0E+00	1.1E-15	3.7E-17	3.6E-17	6.4E-18	8.1E-13
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-14	2.6E-15	0.0E+00	1.4E-15	2.9E-16	5.9E-17	9.3E-18	1.5E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-08	6.7E-14	0.0E+00	6.5E-15	2.4E-16	5.5E-16	2.5E-17	2.0E-08
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-10	3.2E-10	0.0E+00	1.2E-12	5.6E-15	7.9E-16	8.6E-15	5.1E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.9E-08	3.0E-07	0.0E+00	3.0E-09	4.5E-11	2.2E-10	1.9E-11	3.7E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	1.7E-08	0.0E+00	1.8E-10	2.8E-12	1.4E-11	1.2E-12	2.1E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	2.3E-07	0.0E+00	2.6E-09	3.9E-11	1.9E-10	1.7E-11	1.2E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	5.5E-07	0.0E+00	5.7E-09	8.7E-11	4.2E-10	3.7E-11	1.4E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 6

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 30 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-07	8.2E-11	0.0E+00	4.1E-13	9.6E-16	1.0E-15	5.6E-15	1.7E-07

Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-08	3.0E-10	0.0E+00	1.7E-12	3.6E-13	8.8E-16	2.0E-14	3.4E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-11	8.6E-14	0.0E+00	3.0E-14	1.0E-15	8.9E-16	3.6E-16	1.7E-11
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-13	6.1E-14	0.0E+00	3.4E-14	8.0E-15	1.5E-15	5.7E-16	3.4E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-07	5.6E-13	0.0E+00	9.6E-14	3.3E-15	6.3E-15	5.7E-16	1.7E-07
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-10	9.1E-10	0.0E+00	3.6E-12	1.9E-14	2.5E-15	6.9E-14	1.5E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-08	3.0E-07	0.0E+00	3.2E-09	5.2E-11	2.4E-10	4.9E-11	3.7E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	1.7E-08	0.0E+00	3.2E-12	1.5E-11	3.0E-12	2.1E-04	1.0E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	2.2E-07	0.0E+00	2.7E-09	4.5E-11	2.0E-10	4.2E-11	1.1E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.3E-03 5.4E-07 0.0E+00 6.1E-09 1.0E-10 4.6E-10 9.3E-11 1.3E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 7

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 100 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-06	4.9E-10	0.0E+00	2.7E-12	5.3E-15	6.8E-15	6.3E-14	1.0E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-07	9.4E-10	0.0E+00	7.4E-12	1.6E-12	3.4E-15	1.3E-13	1.1E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-10	2.0E-12	0.0E+00	1.1E-12	3.8E-14	2.8E-14	2.2E-14	3.9E-10
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-12	1.4E-12	0.0E+00	9.0E-13	2.7E-13	4.3E-14	3.6E-14	8.3E-12
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-06	5.9E-12	0.0E+00	2.1E-12	6.9E-14	1.1E-13	1.6E-14	1.8E-06
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-09	2.9E-09	0.0E+00	1.3E-11	8.8E-14	1.0E-14	6.5E-13	4.7E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-08	2.8E-07	0.0E+00	3.4E-09	6.4E-11	2.6E-10	1.0E-10	3.5E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-04	1.6E-08	0.0E+00	2.1E-10	3.9E-12	1.6E-11	6.1E-12	2.0E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	2.1E-07	0.0E+00	2.9E-09	5.4E-11	2.2E-10	8.6E-11	1.1E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.3E-03 5.1E-07 0.0E+00 6.5E-09 1.2E-10 5.0E-10 1.9E-10 1.3E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 8

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 300 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-06	1.6E-09	0.0E+00	8.9E-12	1.7E-14	2.3E-14	2.5E-13	3.4E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-07	2.4E-09	0.0E+00	2.2E-11	4.8E-12	9.7E-15	4.4E-13	2.7E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-09	2.3E-11	0.0E+00	1.8E-11	6.6E-13	4.4E-13	4.6E-13	4.5E-09
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-11	1.7E-11	0.0E+00	1.2E-11	4.3E-12	6.2E-13	7.6E-13	1.0E-10
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-05	4.7E-11	0.0E+00	2.9E-11	9.4E-13	1.4E-12	2.3E-13	1.4E-05
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-09	8.1E-09	0.0E+00	4.4E-11	4.1E-13	4.1E-14	4.5E-12	1.3E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-08	2.4E-07	0.0E+00	3.1E-09	6.1E-11	2.4E-10	1.1E-10	3.0E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-04	1.4E-08	0.0E+00	1.9E-10	3.7E-12	1.5E-11	6.9E-12	1.7E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.3E-04	1.8E-07	0.0E+00	2.7E-09	5.2E-11	2.1E-10	9.6E-11	9.3E-04

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.1E-03 4.5E-07 0.0E+00 6.1E-09 1.3E-10 4.7E-10 2.2E-10 1.1E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 9

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-06	3.3E-09	0.0E+00	1.9E-11	3.5E-14	4.8E-14	5.2E-13	7.0E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-07	4.7E-09	0.0E+00	4.3E-11	9.5E-12	1.9E-14	8.8E-13	5.3E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-08	2.0E-10	0.0E+00	2.1E-10	7.5E-12	4.7E-12	5.7E-12	3.9E-08
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-10	1.5E-10	0.0E+00	1.2E-10	4.7E-11	6.4E-12	9.5E-12	9.0E-10
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04	3.5E-10	0.0E+00	3.2E-10	9.9E-12	1.4E-11	2.6E-12	1.1E-04
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-08	2.1E-08	0.0E+00	1.8E-10	2.5E-12	2.2E-13	3.5E-11	3.4E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-08	1.4E-07	0.0E+00	1.8E-09	3.6E-11	1.4E-10	6.7E-11	1.8E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-04	8.3E-09	0.0E+00	1.1E-10	2.2E-12	8.8E-12	4.1E-12	1.0E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-04	1.1E-07	0.0E+00	1.6E-09	3.1E-11	1.2E-10	5.7E-11	5.5E-04
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-04	2.9E-07	0.0E+00	4.4E-09	1.5E-10	3.0E-10	1.8E-10	7.6E-04

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

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Excess Cancer Risks at	
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Time = 1.000E+00	6
Time = 3.000E+00	8
Time = 1.000E+01	10
Time = 3.000E+01	12
Time = 1.000E+02	14
Time = 3.000E+02	16
Time = 1.000E+03	18

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)

DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)
DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
	DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
	DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
	DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
	DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
	DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
	DCSF	Soil ingestion, slope factors, 1/(pCi):			
	DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
	DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
	DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
	DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
	DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)

DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTOR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTOR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	7.47E-17	0	1.49E-20	0	8.24E-23	0	2.42E-24	0	2.00E-25	0	4.97E-26	0	7.47E-17	0
Pa-231	4.50E-16	0	4.53E-19	0	2.44E-21	0	4.70E-22	0	2.20E-24	0	1.25E-24	0	4.51E-16	0
Pb-210	1.16E-22	0	9.03E-25	0	1.19E-25	0	3.93E-27	0	4.44E-27	0	8.55E-29	0	1.17E-22	0

Po-210	8.12E-25	0	2.41E-25	0	6.50E-26	0	9.26E-27	0	2.76E-27	0	5.43E-29	0	1.13E-24	0
Ra-226	5.56E-17	0	1.83E-22	0	6.36E-24	0	2.26E-25	0	7.40E-25	0	3.67E-27	0	5.56E-17	0
Th-230	7.04E-18	0	1.37E-18	0	8.60E-21	0	4.33E-23	0	7.83E-24	0	4.46E-24	0	8.42E-18	0
U-234	5.09E-14	0	2.43E-13	0	1.50E-15	0	2.14E-17	0	1.10E-16	0	5.20E-19	0	2.96E-13	0
U-235	1.68E-10	17	1.41E-14	0	9.86E-17	0	1.40E-18	0	7.21E-18	0	3.42E-20	0	1.68E-10	17
U-238	8.46E-10	83	1.82E-13	0	1.67E-15	0	2.38E-17	0	1.22E-16	0	5.79E-19	0	8.46E-10	83
<hr/>														
Total	1.01E-09	100	4.39E-13	0	3.27E-15	0	4.65E-17	0	2.39E-16	0	1.13E-18	0	1.01E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 5

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
<hr/>									
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

0	From releases to ground water and to surface water																	
	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water			
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%		
Radio-Nuclide																		
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.09E-14	0	2.43E-13	0	0.00E+00	0	1.50E-15	0	2.14E-17	0	1.10E-16	0	5.20E-19	0	2.96E-13	0

U-235	1.68E-10	17	1.41E-14	0	0.00E+00	0	9.86E-17	0	1.40E-18	0	7.21E-18	0	3.42E-20	0	1.68E-10	17
U-238	8.46E-10	83	1.82E-13	0	0.00E+00	0	1.67E-15	0	2.38E-17	0	1.22E-16	0	5.79E-19	0	8.46E-10	83
Total	1.01E-09	100	4.39E-13	0	0.00E+00	0	3.27E-15	0	4.65E-17	0	2.39E-16	0	1.13E-18	0	1.01E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 6

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	4.73E-16	0	9.44E-20	0	5.24E-22	0	7.98E-24	0	1.27E-24	0	6.01E-25	0	4.73E-16	0
Pa-231	1.35E-15	0	1.36E-18	0	7.44E-21	0	1.50E-21	0	5.43E-24	0	7.92E-24	0	1.35E-15	0
Pb-210	1.49E-21	0	1.16E-23	0	1.58E-24	0	5.39E-26	0	5.71E-26	0	1.91E-27	0	1.51E-21	0
Po-210	1.62E-23	0	4.81E-24	0	1.35E-24	0	2.38E-25	0	5.60E-26	0	1.73E-27	0	2.27E-23	0
Ra-226	3.55E-16	0	1.17E-21	0	4.33E-23	0	1.63E-24	0	4.86E-24	0	4.51E-26	0	3.55E-16	0
Th-230	2.11E-17	0	4.11E-18	0	2.58E-20	0	1.19E-22	0	1.93E-23	0	2.85E-23	0	2.53E-17	0
U-234	5.08E-14	0	2.43E-13	0	1.51E-15	0	2.16E-17	0	1.10E-16	0	1.55E-18	0	2.95E-13	0
U-235	1.68E-10	17	1.40E-14	0	9.90E-17	0	1.42E-18	0	7.25E-18	0	1.02E-19	0	1.68E-10	17
U-238	8.45E-10	83	1.82E-13	0	1.68E-15	0	2.40E-17	0	1.23E-16	0	1.72E-18	0	8.45E-10	83
Total	1.01E-09	100	4.39E-13	0	3.28E-15	0	4.70E-17	0	2.40E-16	0	3.38E-18	0	1.01E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 7

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.12E-14	0	2.43E-13	0	0.00E+00	0	1.51E-15	0	2.16E-17	0	1.10E-16	0	1.55E-18	0	2.96E-13	0
U-235	1.68E-10	17	1.40E-14	0	0.00E+00	0	9.91E-17	0	1.42E-18	0	7.25E-18	0	1.02E-19	0	1.68E-10	17
U-238	8.45E-10	83	1.82E-13	0	0.00E+00	0	1.68E-15	0	2.40E-17	0	1.23E-16	0	1.72E-18	0	8.45E-10	83
Total	1.01E-09	100	4.39E-13	0	0.00E+00	0	3.28E-15	0	4.70E-17	0	2.40E-16	0	3.38E-18	0	1.01E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.41E-15	0	4.80E-19	0	2.69E-21	0	2.10E-23	0	6.57E-24	0	6.35E-24	0	2.41E-15	0
Pa-231	3.14E-15	0	3.16E-18	0	1.80E-20	0	3.71E-21	0	1.16E-23	0	4.06E-23	0	3.15E-15	0
Pb-210	1.64E-20	0	1.28E-22	0	1.80E-23	0	6.16E-25	0	6.38E-25	0	4.21E-26	0	1.66E-20	0
Po-210	2.53E-22	0	7.52E-23	0	2.12E-23	0	4.05E-24	0	8.85E-25	0	5.22E-26	0	3.55E-22	0
Ra-226	1.85E-15	0	6.08E-21	0	2.56E-22	0	9.69E-24	0	2.66E-23	0	4.94E-25	0	1.85E-15	0
Th-230	4.93E-17	0	9.57E-18	0	6.05E-20	0	2.70E-22	0	4.08E-23	0	1.47E-22	0	5.89E-17	0
U-234	5.07E-14	0	2.43E-13	0	1.52E-15	0	2.21E-17	0	1.12E-16	0	3.56E-18	0	2.95E-13	0
U-235	1.68E-10	17	1.40E-14	0	9.99E-17	0	1.45E-18	0	7.33E-18	0	2.34E-19	0	1.68E-10	17
U-238	8.44E-10	83	1.82E-13	0	1.69E-15	0	2.46E-17	0	1.24E-16	0	3.96E-18	0	8.44E-10	83
Total	1.01E-09	100	4.38E-13	0	3.31E-15	0	4.81E-17	0	2.43E-16	0	7.76E-18	0	1.01E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t = 3 years								
Radionuclides								
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.26E-14	0	2.43E-13	0	0.00E+00	0	1.52E-15	0	2.21E-17	0	1.12E-16	0	3.56E-18	0	2.97E-13	0
U-235	1.68E-10	17	1.40E-14	0	0.00E+00	0	9.99E-17	0	1.46E-18	0	7.33E-18	0	2.34E-19	0	1.68E-10	17
U-238	8.44E-10	83	1.82E-13	0	0.00E+00	0	1.69E-15	0	2.46E-17	0	1.24E-16	0	3.96E-18	0	8.44E-10	83
Total	1.01E-09	100	4.38E-13	0	0.00E+00	0	3.31E-15	0	4.81E-17	0	2.43E-16	0	7.76E-18	0	1.01E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 10

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years
From releases to ground water and to surface water

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0 From releases to ground water and to surface water

0 Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years

0	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways***
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**CNRSI(i,p,t) includes contribution from progeny radionuclides

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 12

Title : Shiprock GW Evap. Pond Offsite Res. Location B Atm. Transport Rem. Alt 1

0 and Fraction of Total Risk at t = 30 years
From releases to ground water and to surface water

[illegible]

Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
<hr/>														
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.35E-13	0	2.70E-17	0	1.65E-19	0	3.92E-22	0	4.13E-22	0	2.27E-21	0	1.35E-13	0
Pa-231	2.68E-14	0	2.70E-17	0	2.17E-19	0	4.64E-20	0	1.12E-22	0	2.49E-21	0	2.69E-14	0
Pb-210	8.51E-18	0	6.62E-20	0	1.36E-20	0	4.72E-22	0	4.10E-22	0	1.66E-22	0	8.60E-18	0
Po-210	1.88E-19	0	5.58E-20	0	1.70E-20	0	4.00E-21	0	7.46E-22	0	2.89E-22	0	2.66E-19	0
Ra-226	1.36E-13	0	4.49E-19	0	4.78E-20	0	1.62E-21	0	3.15E-21	0	2.81E-22	0	1.36E-13	0
Th-230	4.25E-16	0	8.26E-17	0	5.48E-19	0	2.84E-21	0	3.71E-22	0	1.03E-20	0	5.08E-16	0
U-234	4.97E-14	0	2.38E-13	0	1.65E-15	0	2.73E-17	0	1.24E-16	0	2.54E-17	0	2.89E-13	0
U-235	1.64E-10	17	1.37E-14	0	1.08E-16	0	1.79E-18	0	8.17E-18	0	1.67E-18	0	1.64E-10	17
U-238	8.27E-10	83	1.78E-13	0	1.84E-15	0	3.03E-17	0	1.38E-16	0	2.82E-17	0	8.27E-10	83
<hr/>														
Total	9.91E-10	100	4.30E-13	0	3.60E-15	0	5.95E-17	0	2.71E-16	0	5.53E-17	0	9.92E-10	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 30 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
<hr/>								
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

0

From releases to ground water and to surface water

0

Ground Fish Radon Plant Meat Milk Soil Water

Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%		
U-234	1.87E-13	0	2.38E-13	0	0.00E+00	0	1.65E-15	0	2.73E-17	0	1.24E-16	0	2.54E-17	0	4.26E-13	0
U-235	1.64E-10	17	1.38E-14	0	0.00E+00	0	1.09E-16	0	1.84E-18	0	8.17E-18	0	1.67E-18	0	1.64E-10	17
U-238	8.27E-10	83	1.78E-13	0	0.00E+00	0	1.84E-15	0	3.04E-17	0	1.38E-16	0	2.82E-17	0	8.27E-10	83
Total	9.91E-10	100	4.30E-13	0	0.00E+00	0	3.60E-15	0	5.95E-17	0	2.71E-16	0	5.53E-17	0	9.92E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 14

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

From releases to ground water and to surface water														
Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)						
0	Ground	Inhalation	Plant	Meat	Milk	Soil	All Pathways*

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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
1RESRAD-OFFSITE, Version 4.0           T½ Limit = 30 days           03/28/2023 12:45 Page 15
Risk Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
File  : SHIPROCK ALT1 OFFSITE RESB.ROF

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0 Radionuclides

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

	Ground	Fish	Baden	Plant	Meat	Milk
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[illegible]

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.47E-12	0	2.26E-13	0	0.00E+00	0	1.78E-15	0	3.33E-17	0	1.37E-16	0	5.24E-17	0
U-235	1.57E-10	17	1.33E-14	0	0.00E+00	0	1.19E-16	0	2.39E-18	0	9.02E-18	0	3.48E-18	0
U-238	7.84E-10	83	1.69E-13	0	0.00E+00	0	1.97E-15	0	3.69E-17	0	1.53E-16	0	5.81E-17	0
Total	9.42E-10	100	4.08E-13	0	0.00E+00	0	3.87E-15	0	7.26E-17	0	2.99E-16	0	1.14E-16	0

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 16

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.64E-12	0	5.26E-16	0	3.64E-18	0	7.05E-21	0	9.35E-21	0	1.01E-19	0	2.64E-12	0

U-234	1.14E-11	1	1.94E-13	0	0.00E+00	0	1.66E-15	0	3.50E-17	0	1.28E-16	0	5.99E-17	0	1.16E-11	1
U-235	1.37E-10	17	1.19E-14	0	0.00E+00	0	1.13E-16	0	2.72E-18	0	8.37E-18	0	4.01E-18	0	1.37E-10	17
U-238	6.74E-10	82	1.45E-13	0	0.00E+00	0	1.81E-15	0	3.56E-17	0	1.42E-16	0	6.52E-17	0	6.74E-10	82
Total	8.22E-10	100	3.52E-13	0	0.00E+00	0	3.58E-15	0	7.33E-17	0	2.78E-16	0	1.29E-16	0	8.22E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

0	From releases to ground water and to surface water													
0	Ground		Fish		Plant		Meat		Milk		Soil		Water	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0	Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t = 1000 years													
0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
0	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	5.54E-12	1	1.10E-15	0	7.64E-18	0	1.44E-20	0	1.96E-20	0	2.11E-19	0	5.54E-12	1
Pa-231	4.18E-13	0	4.21E-16	0	5.52E-18	0	1.21E-18	0	2.41E-21	0	1.12E-19	0	4.19E-13	0
Pb-210	1.97E-14	0	1.53E-16	0	9.62E-17	0	3.44E-18	0	2.19E-18	0	2.61E-18	0	2.00E-14	0
Po-210	4.58E-16	0	1.36E-16	0	6.01E-17	0	2.39E-17	0	3.22E-18	0	4.76E-18	0	6.86E-16	0
Ra-226	8.55E-11	15	2.81E-16	0	1.56E-16	0	4.93E-18	0	7.17E-18	0	1.27E-18	0	8.55E-11	15
Th-230	9.83E-15	0	1.91E-15	0	2.70E-17	0	3.76E-19	0	3.26E-20	0	5.20E-18	0	1.18E-14	0
U-234	2.39E-14	0	1.14E-13	0	9.60E-16	0	1.90E-17	0	7.53E-17	0	3.50E-17	0	1.39E-13	0
U-235	7.88E-11	14	6.60E-15	0	6.31E-17	0	1.25E-18	0	4.95E-18	0	2.30E-18	0	7.88E-11	14
U-238	3.97E-10	70	8.55E-14	0	1.07E-15	0	2.11E-17	0	8.37E-17	0	3.89E-17	0	3.97E-10	70

Total	5.67E-10	100	2.10E-13	0	2.44E-15	0	7.52E-17	0	1.77E-16	0	9.04E-17	0	5.68E-10	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:45 Page 19
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESB.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 1000 years
 Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	8.55E-11	15	1.16E-13	0	0.00E+00	0	1.30E-15	0	5.15E-17	0	8.77E-17	0	4.87E-17	0	8.56E-11	15
U-235	8.48E-11	15	8.12E-15	0	0.00E+00	0	7.63E-17	0	2.47E-18	0	4.97E-18	0	2.62E-18	0	8.48E-11	15
U-238	3.97E-10	70	8.58E-14	0	0.00E+00	0	1.07E-15	0	2.12E-17	0	8.39E-17	0	3.90E-17	0	3.97E-10	70
Total	5.67E-10	100	2.10E-13	0	0.00E+00	0	2.44E-15	0	7.52E-17	0	1.77E-16	0	9.04E-17	0	5.68E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Attachment D-14-9a. Offsite Receptor Location R1, Resident Tap Water Inputs, Chemical Risk, Alternative 1

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Variable	Resident Tapwater Default Value	Site-Specific Value
BW ₀₋₂ (mutagenic body weight) kg	15	15
BW ₂₋₆ (mutagenic body weight) kg	15	15
BW ₆₋₁₆ (mutagenic body weight) kg	80	80
BW ₁₆₋₂₆ (mutagenic body weight) kg	80	80
BW _{res-a} (body weight - adult) kg	80	80
BW _{res-c} (body weight - child) kg	15	15
DFW _{res-adj} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{res-adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{res} (exposure duration - resident) year	26	26
ED ₀₋₂ (mutagenic exposure duration first phase) year	2	2
ED ₂₋₆ (mutagenic exposure duration second phase) year	4	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) year	10	10
ED ₁₆₋₂₆ (mutagenic exposure duration fourth phase) year	10	10
ED _{res-a} (exposure duration - adult) year	20	20
ED _{res-c} (exposure duration - child) year	6	6
EF _{res} (exposure frequency) days/yea	350	350
EF ₀₋₂ (mutagenic exposure frequency first phase) days/yea	350	350
EF ₂₋₆ (mutagenic exposure frequency second phase) days/yea	350	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/yea	350	350
EF ₁₆₋₂₆ (mutagenic exposure frequency fourth phase) days/yea	350	350
EF _{res-a} (exposure frequency - adult) days/yea	350	350
EF _{res-c} (exposure frequency - child) days/yea	350	350
ET _{res} (exposure time) hours/day	24	24
ET _{event-res-adj} (age-adjusted exposure time) hours/ever	0.67077	0.67077
ET _{event-res-madj} (mutagenic age-adjusted exposure time) hours/ever	0.67077	0.67077
ET ₀₋₂ (mutagenic dermal exposure time first phase) hours/ever	0.54	0.54
ET ₂₋₆ (mutagenic dermal exposure time second phase) hours/ever	0.54	0.54
ET ₆₋₁₆ (mutagenic dermal exposure time third phase) hours/ever	0.71	0.71
ET ₁₆₋₂₆ (mutagenic dermal exposure time fourth phase) hours/ever	0.71	0.71
ET _{res-a} (dermal exposure time - adult) hours/ever	0.71	0.71
ET _{res-c} (dermal exposure time - child) hours/ever	0.54	0.54
ET ₀₋₂ (mutagenic inhalation exposure time first phase) hours/day	24	24
ET ₂₋₆ (mutagenic inhalation exposure time second phase) hours/day	24	24
ET ₆₋₁₆ (mutagenic inhalation exposure time third phase) hours/day	24	24
ET ₁₆₋₂₆ (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{res-a} (inhalation exposure time - adult) hours/day	24	24
ET _{res-c} (inhalation exposure time - child) hours/day	24	24

EV ₀₋₂ (mutagenic events) per day	1	1
EV ₂₋₆ (mutagenic events) per day	1	1
EV ₆₋₁₆ (mutagenic events) per day	1	1
EV ₁₆₋₂₆ (mutagenic events) per day	1	1
EV _{res-a} (events - adult) per day	1	1
EV _{res-c} (events - child) per day	1	1
IFW _{res-adj} (adjusted intake factor) L/kg	327.95	327.95
IFWM _{res-adj} (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW ₀₋₂ (mutagenic water intake rate) L/day	0.78	0.78
IRW ₂₋₆ (mutagenic water intake rate) L/day	0.78	0.78
IRW ₆₋₁₆ (mutagenic water intake rate) L/day	2.5	2.5
IRW ₁₆₋₂₆ (mutagenic water intake rate) L/day	2.5	2.5
IRW _{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW _{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m ³	0.5	0.5
LT (lifetime) years	70	70
SA ₀₋₂ (mutagenic skin surface area) cm ²	6365	6365
SA ₂₋₆ (mutagenic skin surface area) cm ²	6365	6365
SA ₆₋₁₆ (mutagenic skin surface area) cm ²	19652	19652
SA ₁₆₋₂₆ (mutagenic skin surface area) cm ²	19652	19652
SA _{res-a} (skin surface area - adult) cm ²	19652	19652
SA _{res-c} (skin surface area - child) cm ²	6365	6365
I _{sc} (apparent thickness of stratum corneum) cm	0.001	0.001

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Attachment D-14-9b. Resident Exposures to Groundwater Used as Tap Water at Offsite Receptor Location R1, Chemical Risk, Alternative 1

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	RfC (mg/m³)	RfC Ref	SF _o (mg/kg-day) ⁻¹	SF _o R _{ef}	IUR (ug/m³) ⁻¹	IUR Ref	ABS _{gi}	K _p (cm/hr)	FA	In EPD?	Carcinogenic Absorbed dose per event (ug/cm²-event)	Noncancer-child Absorbed dose per event (ug/cm²-event)	Noncancer-adult Absorbed dose per event (ug/cm²-event)	Noncancer-adjusted Absorbed dose per event (ug/cm²-event)	Tap Water Concentration (ug/L)
Nitrate (measured as nitrogen)	14797-55-8	No	No	1.60E+00	IC	-		-		-		1.00E+00	1.00E-03	1.00E+00	Yes	1.33E-01	1.07E-01	1.41E-01	1.33E-01	1.98E+05
<i>*Total Risk/HI</i>																				

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

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Table continued

Child Ingestion Noncarcinogenic CDI (mg/kg-day)	Child Dermal Noncarcinogenic CDI (mg/kg-day)	Child Inhalation Noncarcinogenic CDI (mg/m³)	Adult Ingestion Noncarcinogenic CDI (mg/kg-day)	Adult Dermal Noncarcinogenic CDI (mg/kg-day)	Adult Inhalation Noncarcinogenic CDI (mg/m³)	Adjusted Ingestion Noncarcinogenic CDI (mg/kg-day)	Adjusted Dermal Noncarcinogenic CDI (mg/kg-day)	Adjusted Inhalation Noncarcinogenic CDI (mg/m³)	Ingestion Carcinogenic CDI (mg/kg-day)	Dermal Carcinogenic CDI (mg/kg-day)	Inhalation Carcinogenic CDI (ug/m³)	Child Ingestion HQ	Child Inhalation HQ
9.87E+00	4.35E-02	9.49E+01	5.93E+00	3.31E-02	9.49E+01	6.84E+00	3.65E-02	9.49E+01	2.54E+00	1.36E-02	3.53E+04	6.17E+00	-
-	-	-	-	-	-	-	-	-	-	-	-	6.17E+00	-

Table continued

Child Dermal HQ	Child Total HI	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Total HI	Adjusted Ingestion HQ	Adjusted Inhalation HQ	Adjusted Dermal HQ	Adjusted Total HI	Ingestion Risk	Inhalation Risk	Dermal Risk	Total Risk
2.72E-02	6.20E+00	3.71E+00	-	2.07E-02	3.73E+00	4.28E+00	-	2.28E-02	4.30E+00	-	-	-	-
2.72E-02	6.20E+00	3.71E+00	-	2.07E-02	3.73E+00	4.28E+00	-	2.28E-02	4.30E+00	-	-	-	-

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Time = 0.000E+00	41
Time = 1.000E+00	42
Time = 3.000E+00	43
Time = 1.000E+01	44
Time = 3.000E+01	45
Time = 1.000E+02	46
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Dose Conversion Factor (and Related) Parameter Summary
 Current Library: DCFPAK3.02
 Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)

DCSF	Pa-234	(Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT (11)
DCSF	Pa-234m	(Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT (12)
DCSF	Pb-210	(Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT (13)
DCSF	Pb-211	(Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT (14)
DCSF	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT (15)
DCSF	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT (16)
DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:				
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/28/2023 12:52	Page 3	
	Parent Dose Report				
	Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1				
	File : SHIPROCK_ALT1_OFFSITE RESC.ROF				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D		6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D		2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1		2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210		1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D		3.528E-02	3.528E-02	DCF2 (6)

DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)
DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)

TF					
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF					
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF					
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF					
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF					
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				

TF	Pa-231	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF					
TF	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF					
TF	Pb-210+D1	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF					
TF	Po-210	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF					
TF	Ra-226+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF					
TF	Th-230	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF					
TF	U-234	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF					
TF	U-235+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF					
TF	U-238	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF					
TF	U-238+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 6
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)

TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210, fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210, crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)
TF				
TF	Ra-226+D, fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D, crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230, fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230, crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234, fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D, fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238, fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D, fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)

VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (8)
VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)

DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)

DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)
DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)

DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach(1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY(1)
LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-6.361E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-6.048E+02	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	8.726E+01	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	1.193E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-6.389E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-6.076E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	5.666E+01	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	8.870E+01	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-6.361E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-5.361E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	1.220E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	2.220E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-5.139E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-4.139E+02	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	9.430E+01	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	1.943E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-6.056E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-5.667E+02	6.562E+01	---	DWELLXY(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	5.940E+01	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	1.081E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)

TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T (2)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+00	3.000E+00	---	T (3)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+01	6.000E+00	---	T (4)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+01	1.200E+01	---	T (5)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+02	3.000E+01	---	T (6)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+02	7.500E+01	---	T (7)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+03	1.750E+02	---	T (8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T (9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T (10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	7.340E-07	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV

PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.003E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.003E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)

AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF (3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG (3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF (3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN (3)
AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB (3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY (3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP (3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG (3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC (3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF (3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO (4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT (4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN (4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF (4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG (4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF (4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN (4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB (4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY (4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP (4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG (4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC (4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF (4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHODWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name

AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX
AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,1)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ (4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ (4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ (5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ (5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ (6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ (1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ (1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ (1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ (1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ (1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ (2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ (2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ (2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ (2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ (2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ (3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ (3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ (3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,2)

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)

AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)

AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)

AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ (2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ (2,2,5)
AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ (2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ (2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ (2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ (3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ (3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ (3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ (3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,5)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ (4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ (4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ (5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ (5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ (6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,5)
AIRT	Joint Frequency in ESE Sector				

AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)
AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ (6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,6)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ (1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ (1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ (1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ (1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ (1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ (2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ (2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ (2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ (2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ (3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ (3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ (3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,7)

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Th Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ (4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ (4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ (5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ (5,4,7)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	AIRT	Joint Frequency in SSE Sector				
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
	AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
	AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
	AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
	AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)

AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,8)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ (5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ (1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ (1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ (1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ (1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ (1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ (2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ (2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ (2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ (2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ (2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ (3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ (3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ (3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ (3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,9)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
AIRT	Joint Frequency in S Sector				

AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)

AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)

AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)
AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)
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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				

AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)
AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)

AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)

AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)

AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,15)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				

AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-9.179E+01	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	6.494E+02	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
0 = (total porosity + distribution coefficient*dry bulk density) / total porosity					

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)

USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ (1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR(1)
WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACTCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

Parent Dose Report

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File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)

LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI(1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI(1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI(2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI(2,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	7.340E-07	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	7.340E-07	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)

SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA (6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA (7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA (8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA (9)
SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA (10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA (11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA (12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	6.742E+01	1.325E+01	---	RAD_SHAPE (13)
SEXT	Outer annular radius (m), ring 14:	1.348E+02	2.650E+01	---	RAD_SHAPE (14)
SEXT	Outer annular radius (m), ring 15:	2.022E+02	3.975E+01	---	RAD_SHAPE (15)
SEXT	Outer annular radius (m), ring 16:	2.697E+02	5.300E+01	---	RAD_SHAPE (16)
SEXT	Outer annular radius (m), ring 17:	3.371E+02	6.625E+01	---	RAD_SHAPE (17)
SEXT	Outer annular radius (m), ring 18:	4.045E+02	7.950E+01	---	RAD_SHAPE (18)
SEXT	Outer annular radius (m), ring 19:	4.719E+02	9.275E+01	---	RAD_SHAPE (19)
SEXT	Outer annular radius (m), ring 20:	5.393E+02	1.060E+02	---	RAD_SHAPE (20)
SEXT	Outer annular radius (m), ring 21:	6.068E+02	1.192E+02	---	RAD_SHAPE (21)
SEXT	Outer annular radius (m), ring 22:	6.742E+02	1.325E+02	---	RAD_SHAPE (22)
SEXT	Outer annular radius (m), ring 23:	7.416E+02	1.458E+02	---	RAD_SHAPE (23)
SEXT	Outer annular radius (m), ring 24:	8.090E+02	1.590E+02	---	RAD_SHAPE (24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA (13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA (14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA (15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA (16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA (17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA (18)
SEXT	Ring 19	0.000E+00	2.000E-01	---	FRACA (19)
SEXT	Ring 20	0.000E+00	1.700E-01	---	FRACA (20)
SEXT	Ring 21	1.500E-02	1.500E-01	---	FRACA (21)
SEXT	Ring 22	5.300E-02	1.300E-01	---	FRACA (22)
SEXT	Ring 23	4.800E-02	1.200E-01	---	FRACA (23)
SEXT	Ring 24	3.800E-02	5.200E-02	---	FRACA (24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	6.204E+02	6.204E+02	---	RAD_SHAPE (25)
SEXT	Outer annular radius (m), ring 26:	6.290E+02	6.290E+02	---	RAD_SHAPE (26)
SEXT	Outer annular radius (m), ring 27:	6.297E+02	6.297E+02	---	RAD_SHAPE (27)
SEXT	Outer annular radius (m), ring 28:	6.585E+02	6.585E+02	---	RAD_SHAPE (28)
SEXT	Outer annular radius (m), ring 29:	6.874E+02	6.874E+02	---	RAD_SHAPE (29)

SEXT	Outer annular radius (m), ring 30:	7.162E+02	7.162E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	7.450E+02	7.450E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	7.738E+02	7.738E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	8.026E+02	8.026E+02	---	RAD_SHAPE(33)
SEXT	Outer annular radius (m), ring 34:	8.314E+02	8.314E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	8.378E+02	8.378E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	8.384E+02	8.384E+02	---	RAD_SHAPE(36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	2.643E-02	2.643E-02	---	FRACA(26)
SEXT	Ring 27	5.304E-02	5.304E-02	---	FRACA(27)
SEXT	Ring 28	5.237E-02	5.237E-02	---	FRACA(28)
SEXT	Ring 29	5.011E-02	5.011E-02	---	FRACA(29)
SEXT	Ring 30	4.804E-02	4.804E-02	---	FRACA(30)
SEXT	Ring 31	4.613E-02	4.613E-02	---	FRACA(31)
SEXT	Ring 32	4.436E-02	4.436E-02	---	FRACA(32)
SEXT	Ring 33	4.273E-02	4.273E-02	---	FRACA(33)
SEXT	Ring 34	4.122E-02	4.122E-02	---	FRACA(34)
SEXT	Ring 35	2.060E-02	2.060E-02	---	FRACA(35)
SEXT	Ring 36	4.249E-04	4.249E-04	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	6.232E+02	6.232E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	6.275E+02	6.275E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	6.384E+02	6.384E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	6.664E+02	6.664E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	6.944E+02	6.944E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	7.223E+02	7.223E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	7.503E+02	7.503E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	7.783E+02	7.783E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	8.063E+02	8.063E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	8.343E+02	8.343E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	8.374E+02	8.374E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	8.456E+02	8.456E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.854E-02	1.854E-02	---	FRACA(38)
SEXT	Ring 39	4.500E-02	4.500E-02	---	FRACA(39)
SEXT	Ring 40	5.177E-02	5.177E-02	---	FRACA(40)
SEXT	Ring 41	4.962E-02	4.962E-02	---	FRACA(41)
SEXT	Ring 42	4.764E-02	4.764E-02	---	FRACA(42)

SEXT	Ring 43	4.581E-02	4.581E-02	---	FRACA (43)
SEXT	Ring 44	4.412E-02	4.412E-02	---	FRACA (44)
SEXT	Ring 45	4.255E-02	4.255E-02	---	FRACA (45)
SEXT	Ring 46	4.109E-02	4.109E-02	---	FRACA (46)
SEXT	Ring 47	2.646E-02	2.646E-02	---	FRACA (47)
SEXT	Ring 48	6.259E-03	6.259E-03	---	FRACA (48)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	5.861E+02	5.861E+02	---	RAD_SHAPE (49)
SEXT	Outer annular radius (m), ring 50:	5.874E+02	5.874E+02	---	RAD_SHAPE (50)
SEXT	Outer annular radius (m), ring 51:	6.108E+02	6.108E+02	---	RAD_SHAPE (51)
SEXT	Outer annular radius (m), ring 52:	6.374E+02	6.374E+02	---	RAD_SHAPE (52)
SEXT	Outer annular radius (m), ring 53:	6.640E+02	6.640E+02	---	RAD_SHAPE (53)
SEXT	Outer annular radius (m), ring 54:	6.907E+02	6.907E+02	---	RAD_SHAPE (54)
SEXT	Outer annular radius (m), ring 55:	7.173E+02	7.173E+02	---	RAD_SHAPE (55)
SEXT	Outer annular radius (m), ring 56:	7.439E+02	7.439E+02	---	RAD_SHAPE (56)
SEXT	Outer annular radius (m), ring 57:	7.705E+02	7.705E+02	---	RAD_SHAPE (57)
SEXT	Outer annular radius (m), ring 58:	7.971E+02	7.971E+02	---	RAD_SHAPE (58)
SEXT	Outer annular radius (m), ring 59:	7.981E+02	7.981E+02	---	RAD_SHAPE (59)
SEXT	Outer annular radius (m), ring 60:	8.154E+02	8.154E+02	---	RAD_SHAPE (60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA (49)
SEXT	Ring 50	1.059E-02	1.059E-02	---	FRACA (50)
SEXT	Ring 51	3.871E-02	3.871E-02	---	FRACA (51)
SEXT	Ring 52	5.439E-02	5.439E-02	---	FRACA (52)
SEXT	Ring 53	5.212E-02	5.212E-02	---	FRACA (53)
SEXT	Ring 54	5.003E-02	5.003E-02	---	FRACA (54)
SEXT	Ring 55	4.811E-02	4.811E-02	---	FRACA (55)
SEXT	Ring 56	4.633E-02	4.633E-02	---	FRACA (56)
SEXT	Ring 57	4.467E-02	4.467E-02	---	FRACA (57)
SEXT	Ring 58	4.314E-02	4.314E-02	---	FRACA (58)
SEXT	Ring 59	3.459E-02	3.459E-02	---	FRACA (59)
SEXT	Ring 60	1.325E-02	1.325E-02	---	FRACA (60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	4.639E+02	4.639E+02	---	RAD_SHAPE (61)
SEXT	Outer annular radius (m), ring 62:	4.687E+02	4.687E+02	---	RAD_SHAPE (62)
SEXT	Outer annular radius (m), ring 63:	4.858E+02	4.858E+02	---	RAD_SHAPE (63)
SEXT	Outer annular radius (m), ring 64:	5.128E+02	5.128E+02	---	RAD_SHAPE (64)
SEXT	Outer annular radius (m), ring 65:	5.398E+02	5.398E+02	---	RAD_SHAPE (65)
SEXT	Outer annular radius (m), ring 66:	5.669E+02	5.669E+02	---	RAD_SHAPE (66)

SEXT	Outer annular radius (m), ring 67:	5.939E+02	5.939E+02	---	RAD_SHAPE (67)
SEXT	Outer annular radius (m), ring 68:	6.209E+02	6.209E+02	---	RAD_SHAPE (68)
SEXT	Outer annular radius (m), ring 69:	6.479E+02	6.479E+02	---	RAD_SHAPE (69)
SEXT	Outer annular radius (m), ring 70:	6.749E+02	6.749E+02	---	RAD_SHAPE (70)
SEXT	Outer annular radius (m), ring 71:	6.782E+02	6.782E+02	---	RAD_SHAPE (71)
SEXT	Outer annular radius (m), ring 72:	6.902E+02	6.902E+02	---	RAD_SHAPE (72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	2.284E-02	2.284E-02	---	FRACA (62)
SEXT	Ring 63	5.791E-02	5.791E-02	---	FRACA (63)
SEXT	Ring 64	6.798E-02	6.798E-02	---	FRACA (64)
SEXT	Ring 65	6.442E-02	6.442E-02	---	FRACA (65)
SEXT	Ring 66	6.122E-02	6.122E-02	---	FRACA (66)
SEXT	Ring 67	5.832E-02	5.832E-02	---	FRACA (67)
SEXT	Ring 68	5.569E-02	5.569E-02	---	FRACA (68)
SEXT	Ring 69	5.329E-02	5.329E-02	---	FRACA (69)
SEXT	Ring 70	5.108E-02	5.108E-02	---	FRACA (70)
SEXT	Ring 71	3.421E-02	3.421E-02	---	FRACA (71)
SEXT	Ring 72	9.143E-03	9.143E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM
RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVS

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVS
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK(1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK(2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT(1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT(2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT(3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT(4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK(1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK(2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT(1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT(2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT(3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT(4)

Summary of Pathway Selections

Pathway	User Selection
---------	----------------

1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 40

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	6.511E-05	6.506E-05	6.497E-05	6.463E-05	6.368E-05	6.053E-05	5.276E-05	3.594E-05
M(t):	2.605E-06	2.603E-06	2.599E-06	2.585E-06	2.547E-06	2.421E-06	2.111E-06	1.438E-06

0Maximum TDOSE(t): 6.511E-05 mrem/yr at t = 0 years

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 41

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 0 years

From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	3.22E-09	0	7.57E-07	1	0.00E+00	0	5.57E-09	0	1.53E-10	0	6.41E-10	0	2.42E-12	0	7.67E-07	1
U-235	9.89E-06	15	4.39E-08	0	0.00E+00	0	3.40E-10	0	9.37E-12	0	3.91E-11	0	1.48E-13	0	9.94E-06	15
U-238	5.38E-05	83	5.71E-07	1	0.00E+00	0	4.75E-09	0	1.31E-10	0	5.47E-10	0	2.07E-12	0	5.44E-05	84
Total	6.37E-05	98	1.37E-06	2	0.00E+00	0	1.07E-08	0	2.93E-10	0	1.23E-09	0	4.64E-12	0	6.51E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water

0	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	3.24E-09	0	7.57E-07	1	0.00E+00	0	5.59E-09	0	1.55E-10	0	6.45E-10	0	7.22E-12	0	7.66E-07	1
U-235	9.89E-06	15	4.38E-08	0	0.00E+00	0	3.42E-10	0	9.52E-12	0	3.94E-11	0	4.41E-13	0	9.93E-06	15
U-238	5.38E-05	83	5.70E-07	1	0.00E+00	0	4.77E-09	0	1.32E-10	0	5.50E-10	0	6.16E-12	0	5.44E-05	84
Total	6.37E-05	98	1.37E-06	2	0.00E+00	0	1.07E-08	0	2.97E-10	0	1.23E-09	0	1.38E-11	0	6.51E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

From releases to ground water and to surface water

0	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
---	--------	------	-------	-------	------	------	------	-------

Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	3.32E-09	0	7.56E-07	1	0.00E+00	0	5.63E-09	0	1.59E-10	0	6.52E-10	0	1.66E-11	0	7.66E-07	1
U-235	9.87E-06	15	4.38E-08	0	0.00E+00	0	3.44E-10	0	9.85E-12	0	3.99E-11	0	1.01E-12	0	9.92E-06	15
U-238	5.37E-05	83	5.69E-07	1	0.00E+00	0	4.81E-09	0	1.36E-10	0	5.57E-10	0	1.42E-11	0	5.43E-05	84
Total	6.36E-05	98	1.37E-06	2	0.00E+00	0	1.08E-08	0	3.05E-10	0	1.25E-09	0	3.18E-11	0	6.50E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

		From releases to ground water and to surface water														
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)												All Pathways*			
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil			
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	4.15E-09	0	7.52E-07	1	0.00E+00	0	5.78E-09	0	1.73E-10	0	6.78E-10	0	4.72E-11	0	7.63E-07	1
U-235	9.82E-06	15	4.38E-08	0	0.00E+00	0	3.54E-10	0	1.10E-11	0	4.14E-11	0	2.89E-12	0	9.87E-06	15
U-238	5.34E-05	83	5.66E-07	1	0.00E+00	0	4.93E-09	0	1.48E-10	0	5.79E-10	0	4.03E-11	0	5.40E-05	84

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

From releases to ground water and to surface water

[illegible]

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	1.11E-08	0	7.42E-07	1	0.00E+00	0	6.09E-09	0	2.05E-10	0	7.35E-10	0	1.18E-10	0	7.61E-07	1
U-235	9.68E-06	15	4.38E-08	0	0.00E+00	0	3.76E-10	0	1.40E-11	0	4.49E-11	0	7.28E-12	0	9.73E-06	15
U-238	5.26E-05	83	5.58E-07	1	0.00E+00	0	5.20E-09	0	1.75E-10	0	6.27E-10	0	1.01E-10	0	5.32E-05	84
Total	6.23E-05	98	1.34E-06	2	0.00E+00	0	1.17E-08	0	3.94E-10	0	1.41E-09	0	2.27E-10	0	6.37E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

$T_{1/2}$ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 100 years

From releases to ground water and to surface water

[illegible]

Total 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 100 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	8.53E-08	0	7.09E-07	1	0.00E+00	0	6.53E-09	0	2.59E-10	0	8.20E-10	0	2.45E-10	0	8.02E-07	1
U-235	9.23E-06	15	4.42E-08	0	0.00E+00	0	4.16E-10	0	2.24E-11	0	5.01E-11	0	1.53E-11	0	9.27E-06	15
U-238	4.99E-05	82	5.29E-07	1	0.00E+00	0	5.55E-09	0	2.19E-10	0	7.00E-10	0	2.08E-10	0	5.05E-05	83
Total	5.92E-05	98	1.28E-06	2	0.00E+00	0	1.25E-08	0	5.00E-10	0	1.57E-09	0	4.68E-10	0	6.05E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	6.58E-07	1	6.23E-07	1	0.00E+00	0	6.13E-09	0	2.78E-10	0	7.71E-10	0	2.87E-10	0	1.29E-06	2
U-235	8.06E-06	15	4.49E-08	0	0.00E+00	0	4.21E-10	0	3.56E-11	0	4.68E-11	0	1.83E-11	0	8.10E-06	15
U-238	4.29E-05	81	4.55E-07	1	0.00E+00	0	5.07E-09	0	2.14E-10	0	6.53E-10	0	2.33E-10	0	4.34E-05	82
Total	5.16E-05	98	1.12E-06	2	0.00E+00	0	1.16E-08	0	5.28E-10	0	1.47E-09	0	5.38E-10	0	5.28E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years																
Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*		
Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	4.94E-06	14	4.09E-07	1	0.00E+00	0	5.03E-09	0	4.40E-10	0	5.35E-10	0	2.89E-10	0	5.35E-06	15
U-235	5.00E-06	14	4.06E-08	0	0.00E+00	0	3.31E-10	0	4.90E-11	0	2.78E-11	0	1.33E-11	0	5.04E-06	14
U-238	2.53E-05	70	2.69E-07	1	0.00E+00	0	3.01E-09	0	1.28E-10	0	3.87E-10	0	1.40E-10	0	2.56E-05	71
Total	3.52E-05	98	7.18E-07	2	0.00E+00	0	8.37E-09	0	6.16E-10	0	9.49E-10	0	4.42E-10	0	3.59E-05	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Dose/Source Ratios Summed Over All Pathways Parent and Progeny Principal Radionuclide Contributions Indicated												
Parent (i)	Product (j)	Parent and Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g)									
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03		
U-234	U-234	1.000E+00	5.164E-08	5.160E-08	5.153E-08	5.127E-08	5.054E-08	4.799E-08	4.127E-08	2.426E-08		
U-234	Th-230	1.000E+00	2.570E-12	7.706E-12	1.797E-11	5.376E-11	1.550E-10	4.975E-10	1.382E-09	3.603E-09		
U-234	Ra-226+D	1.000E+00	2.161E-13	1.382E-12	7.185E-12	6.373E-11	5.308E-10	5.534E-09	4.413E-08	3.324E-07		
U-234	Pb-210+D	1.000E+00	9.525E-19	1.225E-17	1.350E-16	3.358E-15	7.133E-14	1.689E-12	2.048E-11	1.855E-10		
U-234	Po-210	1.000E+00	6.977E-20	1.435E-18	2.265E-17	7.415E-16	1.783E-14	4.650E-13	6.099E-12	5.849E-11		
U-234	ΣDSR(j)		5.164E-08	5.161E-08	5.155E-08	5.139E-08	5.122E-08	5.403E-08	8.681E-08	3.605E-07		
OU-234	U-234	1.339E-06	6.914E-14	6.909E-14	6.899E-14	6.865E-14	6.767E-14	6.426E-14	5.526E-14	3.249E-14		
U-234	Th-230	1.339E-06	3.441E-18	1.032E-17	2.406E-17	7.199E-17	2.076E-16	6.662E-16	1.850E-15	4.824E-15		
U-234	Ra-226+D	1.339E-06	2.894E-19	1.851E-18	9.621E-18	8.533E-17	7.107E-16	7.410E-15	5.909E-14	4.451E-13		
U-234	Pb-210+D1	1.339E-06	5.345E-24	6.866E-23	7.563E-22	1.873E-20	3.938E-19	9.084E-18	1.066E-16	9.397E-16		
U-234	ΣDSR(j)		6.915E-14	6.910E-14	6.903E-14	6.881E-14	6.859E-14	7.235E-14	1.163E-13	4.833E-13		
OU-235+D	U-235+D	1.000E+00	1.041E-05	1.040E-05	1.038E-05	1.033E-05	1.017E-05	9.651E-06	8.296E-06	4.887E-06		
U-235+D	Pa-231	1.000E+00	4.084E-11	1.225E-10	2.853E-10	8.515E-10	2.437E-09	7.617E-09	1.955E-08	3.806E-08		

U-235+D	Ac-227+D	1.000E+00	4.728E-12	2.996E-11	1.525E-10	1.255E-09	8.562E-09	5.135E-08	1.670E-07	3.506E-07
U-235	ΣDSR(j)		1.041E-05	1.040E-05	1.038E-05	1.033E-05	1.019E-05	9.709E-06	8.483E-06	5.276E-06
0U-238	U-238	5.450E-07	2.540E-14	2.538E-14	2.534E-14	2.522E-14	2.486E-14	2.361E-14	2.032E-14	1.197E-14
0U-238+D	U-238+D	1.000E+00	4.160E-06	4.156E-06	4.150E-06	4.128E-06	4.067E-06	3.857E-06	3.316E-06	1.953E-06
U-238+D	U-234	1.000E+00	7.288E-14	2.185E-13	5.092E-13	1.520E-12	4.352E-12	1.362E-11	3.503E-11	6.863E-11
U-238+D	Th-230	1.000E+00	2.701E-18	1.728E-17	8.983E-17	7.972E-16	6.650E-15	6.971E-14	5.641E-13	4.456E-12
U-238+D	Ra-226+D	1.000E+00	1.679E-19	2.172E-18	2.425E-17	6.316E-16	1.522E-14	5.211E-13	1.231E-11	2.972E-10
U-238+D	Pb-210+D	1.000E+00	5.496E-25	1.524E-23	3.500E-22	2.541E-20	1.602E-18	1.333E-16	5.208E-15	1.599E-13
U-238+D	Po-210	1.000E+00	4.354E-26	1.600E-24	5.349E-23	5.359E-21	3.932E-19	3.642E-17	1.538E-15	4.986E-14
U-238	ΣDSR(j)		4.160E-06	4.156E-06	4.150E-06	4.128E-06	4.067E-06	3.857E-06	3.316E-06	1.954E-06
0U-238+D	U-238+D	1.339E-06	5.570E-12	5.565E-12	5.557E-12	5.528E-12	5.445E-12	5.165E-12	4.440E-12	2.615E-12
U-238+D	U-234	1.339E-06	9.759E-20	2.926E-19	6.818E-19	2.035E-18	5.827E-18	1.824E-17	4.690E-17	9.190E-17
U-238+D	Th-230	1.339E-06	3.617E-24	2.314E-23	1.203E-22	1.067E-21	8.904E-21	9.334E-20	7.553E-19	5.967E-18
U-238+D	Ra-226+D	1.339E-06	2.262E-25	2.910E-24	3.247E-23	8.457E-22	2.038E-20	6.978E-19	1.648E-17	3.979E-16
U-238+D	Pb-210+D1	1.339E-06	4.954E-30	8.936E-29	1.960E-27	1.417E-25	8.842E-24	7.179E-22	2.721E-20	8.146E-19
U-238	ΣDSR(j)		5.570E-12	5.565E-12	5.557E-12	5.528E-12	5.445E-12	5.165E-12	4.440E-12	2.616E-12

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	4.841E+08	4.844E+08	4.849E+08	4.865E+08	4.881E+08	4.627E+08	2.880E+08	6.935E+07
U-235	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06	*2.160E+06
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.485E+01	1001	3.608E-07	6.930E+07	5.164E-08	4.841E+08
U-235	9.550E-01	0	1.041E-05	*2.160E+06	1.041E-05	*2.160E+06
U-238	1.308E+01	0	4.160E-06	*3.361E+05	4.160E-06	*3.361E+05

*At specific activity limit

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated										
ONuclide	Parent	THF(i)	t=	DOSE(j,t), mrem/yr						
(j)	(i)			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		7.668E-07	7.663E-07	7.652E-07	7.614E-07	7.505E-07	7.127E-07	6.128E-07 3.603E-07
U-234	U-234	1.339E-06		1.027E-12	1.026E-12	1.025E-12	1.019E-12	1.005E-12	9.543E-13	8.206E-13 4.824E-13
U-234	U-238	1.000E+00		9.533E-13	2.858E-12	6.660E-12	1.988E-11	5.693E-11	1.781E-10	4.582E-10 8.977E-10
U-234	ΣDOSE(j):			7.668E-07	7.663E-07	7.652E-07	7.614E-07	7.505E-07	7.129E-07	6.133E-07 3.612E-07
Th-230	U-234	1.000E+00		3.816E-11	1.144E-10	2.668E-10	7.984E-10	2.302E-09	7.388E-09	2.052E-08 5.350E-08
Th-230	U-238	1.000E+00		3.533E-17	2.260E-16	1.175E-15	1.043E-14	8.698E-14	9.118E-13	7.379E-12 5.829E-11
Th-230	ΣDOSE(j):			3.816E-11	1.144E-10	2.668E-10	7.984E-10	2.302E-09	7.389E-09	2.053E-08 5.356E-08
ORa-226	U-234	1.000E+00		3.209E-12	2.053E-11	1.067E-10	9.464E-10	7.882E-09	8.218E-08	6.553E-07 4.936E-06
Ra-226	U-238	1.000E+00		2.196E-18	2.842E-17	3.172E-16	8.261E-15	1.991E-13	6.816E-12	1.610E-10 3.887E-09
Ra-226	ΣDOSE(j):			3.209E-12	2.053E-11	1.067E-10	9.464E-10	7.882E-09	8.219E-08	6.555E-07 4.940E-06
OPb-210	U-234	1.000E+00		1.414E-17	1.819E-16	2.005E-15	4.987E-14	1.059E-12	2.507E-11	3.041E-10 2.755E-09
Pb-210	U-238	1.000E+00		7.189E-24	1.994E-22	4.577E-21	3.324E-19	2.095E-17	1.744E-15	6.812E-14 2.092E-12
Pb-210	ΣDOSE(j):			1.414E-17	1.819E-16	2.005E-15	4.987E-14	1.059E-12	2.508E-11	3.041E-10 2.757E-09
OPo-210	U-234	1.000E+00		1.036E-18	2.131E-17	3.364E-16	1.101E-14	2.648E-13	6.905E-12	9.057E-11 8.685E-10
Po-210	U-238	1.000E+00		5.696E-25	2.093E-23	6.997E-22	7.009E-20	5.143E-18	4.764E-16	2.011E-14 6.522E-13
Po-210	ΣDOSE(j):			1.036E-18	2.131E-17	3.364E-16	1.101E-14	2.648E-13	6.905E-12	9.059E-11 8.692E-10
Th-230	U-234	1.339E-06		5.110E-17	1.532E-16	3.573E-16	1.069E-15	3.082E-15	9.893E-15	2.747E-14 7.164E-14
Th-230	U-238	1.339E-06		4.731E-23	3.026E-22	1.573E-21	1.396E-20	1.165E-19	1.221E-18	9.880E-18 7.804E-17
Th-230	ΣDOSE(j):			5.110E-17	1.532E-16	3.573E-16	1.069E-15	3.082E-15	9.894E-15	2.748E-14 7.172E-14
ORa-226	U-234	1.339E-06		4.297E-18	2.748E-17	1.429E-16	1.267E-15	1.055E-14	1.100E-13	8.775E-13 6.610E-12
Ra-226	U-238	1.339E-06		2.958E-24	3.806E-23	4.247E-22	1.106E-20	2.666E-19	9.127E-18	2.156E-16 5.204E-15
Ra-226	ΣDOSE(j):			4.297E-18	2.748E-17	1.429E-16	1.267E-15	1.055E-14	1.100E-13	8.777E-13 6.615E-12
OPb-210	U-234	1.339E-06		7.938E-23	1.020E-21	1.123E-20	2.782E-19	5.847E-18	1.349E-16	1.584E-15 1.396E-14
Pb-210	U-238	1.339E-06		6.480E-29	1.169E-27	2.564E-26	1.854E-24	1.157E-22	9.391E-21	3.560E-19 1.065E-17
Pb-210	ΣDOSE(j):			7.938E-23	1.020E-21	1.123E-20	2.782E-19	5.848E-18	1.349E-16	1.584E-15 1.397E-14
OU-235	U-235	1.000E+00		9.939E-06	9.931E-06	9.916E-06	9.864E-06	9.716E-06	9.216E-06	7.923E-06 4.667E-06
OPa-231	U-235	1.000E+00		3.900E-11	1.169E-10	2.725E-10	8.132E-10	2.327E-09	7.275E-09	1.867E-08 3.634E-08
OAc-227	U-235	1.000E+00		4.516E-12	2.861E-11	1.456E-10	1.199E-09	8.177E-09	4.904E-08	1.595E-07 3.349E-07
OU-238	U-238	5.450E-07		3.322E-13	3.320E-13	3.315E-13	3.299E-13	3.252E-13	3.088E-13	2.657E-13 1.565E-13
U-238	U-238	1.000E+00		5.441E-05	5.437E-05	5.428E-05	5.400E-05	5.319E-05	5.045E-05	4.337E-05 2.555E-05
U-238	ΣDOSE(j):			5.441E-05	5.437E-05	5.428E-05	5.400E-05	5.319E-05	5.045E-05	4.337E-05 2.555E-05
OU-238	U-238	1.339E-06		7.285E-11	7.280E-11	7.269E-11	7.230E-11	7.122E-11	6.755E-11	5.808E-11 3.421E-11
1RESRAD-OFFSITE, Version 4.0				T½ Limit = 30 days 03/28/2023 12:52 Page 52						
Parent Dose Report										
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1										
File : SHIPROCK ALT1 OFFSITE RESC.ROF										

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated										
0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-238	1.339E-06		1.276E-18	3.827E-18	8.918E-18	2.662E-17	7.622E-17	2.385E-16	6.135E-16 1.202E-15

THF(i) is the thread fraction of the parent nuclide.
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 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Individual Nuclide Soil Concentration										
Parent Nuclide and Thread Fraction Indicated										
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
				1.000E+03						
U-234	U-234	1.000E+00	1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.376E+01	1.183E+01	6.952E+00
U-234	U-234	1.339E-06	1.988E-05	1.987E-05	1.984E-05	1.973E-05	1.944E-05	1.843E-05	1.584E-05	9.309E-06
U-234	U-238	1.000E+00	0.000E+00	3.690E-05	1.105E-04	3.665E-04	1.083E-03	3.424E-03	8.827E-03	1.731E-02
U-234	ΣS(j):		1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.377E+01	1.184E+01	6.970E+00
0Th-230	U-234	1.000E+00	0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.658E-02	9.516E-02
Th-230	U-238	1.000E+00	0.000E+00	1.715E-10	1.531E-09	1.690E-08	1.505E-07	1.614E-06	1.314E-05	1.038E-04
Th-230	ΣS(j):		0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.659E-02	9.527E-02
0Ra-226	U-234	1.000E+00	0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03	1.691E-02
Ra-226	U-238	1.000E+00	0.000E+00	2.540E-14	6.675E-13	2.441E-11	6.499E-10	2.304E-08	5.496E-07	1.331E-05
Ra-226	ΣS(j):		0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03	1.693E-02
0Pb-210	U-234	1.000E+00	0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.822E-03	1.594E-02
Pb-210	U-238	1.000E+00	0.000E+00	2.104E-16	1.566E-14	1.797E-12	1.278E-10	1.078E-08	4.094E-07	1.219E-05
Pb-210	ΣS(j):		0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.823E-03	1.595E-02
0Po-210	U-234	1.000E+00	0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03	1.590E-02
Po-210	U-238	1.000E+00	0.000E+00	6.291E-17	8.792E-15	1.464E-12	1.191E-10	1.055E-08	4.063E-07	1.215E-05
Po-210	ΣS(j):		0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03	1.591E-02
0Th-230	U-234	1.339E-06	0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.422E-09	1.760E-08	4.898E-08	1.274E-07
Th-230	U-238	1.339E-06	0.000E+00	2.296E-16	2.049E-15	2.263E-14	2.015E-13	2.161E-12	1.759E-11	1.390E-10
Th-230	ΣS(j):		0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.423E-09	1.760E-08	4.900E-08	1.276E-07
0Ra-226	U-234	1.339E-06	0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.000E-09	2.265E-08
Ra-226	U-238	1.339E-06	0.000E+00	3.411E-20	8.938E-19	3.269E-17	8.702E-16	3.085E-14	7.359E-13	1.783E-11
Ra-226	ΣS(j):		0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.001E-09	2.267E-08
0Pb-210	U-234	1.339E-06	0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09	2.135E-08
Pb-210	U-238	1.339E-06	0.000E+00	3.417E-22	2.096E-20	2.406E-18	1.711E-16	1.443E-14	5.482E-13	1.632E-11
Pb-210	ΣS(j):		0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09	2.136E-08
0U-235	U-235	1.000E+00	9.550E-01	9.543E-01	9.528E-01	9.478E-01	9.336E-01	8.855E-01	7.612E-01	4.484E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.019E-05	6.048E-05	2.005E-04	5.924E-04	1.871E-03	4.816E-03	9.387E-03
0Ac-227	U-235	1.000E+00	0.000E+00	3.211E-07	2.804E-06	2.870E-05	2.088E-04	1.280E-03	4.183E-03	8.794E-03
0U-238	U-238	5.450E-07	7.129E-06	7.123E-06	7.112E-06	7.075E-06	6.969E-06	6.609E-06	5.682E-06	3.347E-06
U-238	U-238	1.000E+00	1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01	6.141E+00
U-238	ΣS(j):		1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01	6.141E+00
0U-238	U-238	1.339E-06	1.751E-05	1.750E-05	1.747E-05	1.738E-05	1.712E-05	1.624E-05	1.396E-05	8.223E-06

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 54
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
U-234	U-238	1.339E-06	0.000E+00	4.941E-11	1.480E-10	4.908E-10	1.450E-09	4.584E-09	1.182E-08	2.318E-08

THF(i) is the thread fraction of the parent nuclide.

RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 55

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Run Time Information

ResOCalc.EXE execution began at 12:52 on 03/28/2023

ResOCalc.EXE execution ended at 12:52 on 03/28/2023

ResOCalc.EXE execution time 22.601 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years	2
Time = 1.000E+00 years	3
Time = 3.000E+00 years	4
Time = 1.000E+01 years	5
Time = 3.000E+01 years	6
Time = 1.000E+02 years	7
Time = 3.000E+02 years	8
Time = 1.000E+03 years	9

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.4E-12	1.1E-13	0.0E+00	3.9E-16	2.2E-17	1.5E-18	3.0E-19	4.5E-12
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-11	1.3E-11	0.0E+00	3.7E-14	1.4E-14	5.3E-17	2.4E-17	3.9E-11
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-17	2.9E-18	0.0E+00	5.0E-19	3.2E-20	2.9E-20	4.5E-22	1.4E-17
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-20	6.5E-19	0.0E+00	2.5E-19	6.7E-20	1.7E-20	2.6E-22	1.0E-18
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-12	5.7E-16	0.0E+00	2.5E-17	1.7E-18	4.5E-18	1.8E-20	3.2E-12
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-13	3.8E-11	0.0E+00	1.1E-13	1.1E-15	1.6E-16	7.2E-17	3.8E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-09	7.6E-07	0.0E+00	5.6E-09	1.5E-10	6.4E-10	2.4E-12	7.7E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.9E-06	4.4E-08	0.0E+00	3.4E-10	9.4E-12	3.9E-11	1.5E-13	9.9E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-05	5.7E-07	0.0E+00	4.8E-09	1.3E-10	5.5E-10	2.1E-12	5.4E-05
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-05	1.4E-06	0.0E+00	1.1E-08	2.9E-10	1.2E-09	4.6E-12	6.5E-05

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-11	7.1E-13	0.0E+00	2.5E-15	7.4E-17	9.5E-18	3.6E-18	2.9E-11
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-11	3.8E-11	0.0E+00	1.1E-13	4.4E-14	1.3E-16	1.5E-16	1.2E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-16	3.8E-17	0.0E+00	6.6E-18	4.4E-19	3.8E-19	1.0E-20	1.8E-16
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.4E-19	1.3E-17	0.0E+00	5.2E-18	1.8E-18	3.4E-19	8.3E-21	2.1E-17
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-11	3.6E-15	0.0E+00	1.7E-16	1.2E-17	3.0E-17	2.2E-19	2.1E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-12	1.1E-10	0.0E+00	3.3E-13	3.0E-15	3.9E-16	4.6E-16	1.1E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-09	7.6E-07	0.0E+00	5.6E-09	1.6E-10	6.4E-10	7.2E-12	7.7E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.9E-06	4.4E-08	0.0E+00	3.4E-10	9.5E-12	3.9E-11	4.4E-13	9.9E-06

U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-05	5.7E-07	0.0E+00	4.8E-09	1.3E-10	5.5E-10	6.2E-12	5.4E-05
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-05	1.4E-06	0.0E+00	1.1E-08	3.0E-10	1.2E-09	1.4E-11	6.5E-05

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 4
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 3 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-10	3.6E-12	0.0E+00	1.3E-14	1.9E-16	4.9E-17	3.8E-17	1.5E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-10	8.8E-11	0.0E+00	2.7E-13	1.1E-13	2.8E-16	7.7E-16	2.7E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-15	4.1E-16	0.0E+00	7.5E-17	5.1E-18	4.2E-18	2.2E-19	2.0E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-17	2.0E-16	0.0E+00	8.2E-17	3.0E-17	5.4E-18	2.5E-19	3.4E-16
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-10	1.9E-14	0.0E+00	9.8E-16	7.5E-17	1.6E-16	2.4E-18	1.1E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-12	2.6E-10	0.0E+00	7.8E-13	6.7E-15	8.3E-16	2.4E-15	2.7E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-09	7.6E-07	0.0E+00	5.6E-09	1.6E-10	6.5E-10	1.7E-11	7.7E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.9E-06	4.4E-08	0.0E+00	3.4E-10	9.7E-12	4.0E-11	1.0E-12	9.9E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-05	5.7E-07	0.0E+00	4.8E-09	1.4E-10	5.6E-10	1.4E-11	5.4E-05
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-05	1.4E-06	0.0E+00	1.1E-08	3.1E-10	1.2E-09	3.2E-11	6.5E-05

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 5
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 10 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-09	3.0E-11	0.0E+00	1.1E-13	7.9E-16	4.2E-16	8.4E-16	1.2E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-10	2.6E-10	0.0E+00	9.1E-13	3.8E-13	8.4E-16	6.5E-15	8.1E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-14	1.0E-14	0.0E+00	2.1E-15	1.4E-16	1.1E-16	1.5E-17	5.0E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-16	6.6E-15	0.0E+00	2.7E-15	1.1E-15	1.8E-16	2.2E-17	1.1E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-10	1.7E-13	0.0E+00	1.2E-14	9.4E-16	1.7E-15	6.1E-17	9.5E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-12	7.9E-10	0.0E+00	2.4E-12	2.1E-14	2.4E-15	2.1E-14	8.0E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-09	7.5E-07	0.0E+00	5.8E-09	1.7E-10	6.8E-10	4.7E-11	7.6E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-06	4.4E-08	0.0E+00	3.5E-10	1.1E-11	4.1E-11	2.9E-12	9.9E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-05	5.7E-07	0.0E+00	4.9E-09	1.5E-10	5.8E-10	4.0E-11	5.4E-05
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-05	1.4E-06	0.0E+00	1.1E-08	3.3E-10	1.3E-09	9.0E-11	6.5E-05

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 6
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 30 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-09	2.0E-10	0.0E+00	7.8E-13	3.8E-15	3.1E-15	1.4E-14	8.2E-09

Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-09	7.5E-10	0.0E+00	3.2E-12	1.5E-12	2.7E-15	4.7E-14	2.3E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-13	2.1E-13	0.0E+00	5.6E-14	4.1E-15	2.8E-15	8.7E-16	1.1E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-14	1.5E-13	0.0E+00	6.5E-14	3.1E-14	4.6E-15	1.4E-15	2.6E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-09	1.4E-12	0.0E+00	1.8E-13	1.4E-14	2.0E-14	1.4E-15	7.9E-09
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-11	2.3E-09	0.0E+00	7.0E-12	7.4E-14	7.6E-15	1.7E-13	2.3E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-09	7.4E-07	0.0E+00	6.1E-09	2.0E-10	7.3E-10	1.2E-10	7.5E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.7E-06	4.3E-08	0.0E+00	3.7E-10	1.3E-11	4.5E-11	7.2E-12	9.7E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-05	5.6E-07	0.0E+00	5.2E-09	1.7E-10	6.3E-10	1.0E-10	5.3E-05

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 6.2E-05 1.3E-06 0.0E+00 1.2E-08 3.9E-10 1.4E-09 2.3E-10 6.4E-05

0*Sum of dose from all releases and from primary contamination.

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Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 100 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-08	1.2E-09	0.0E+00	5.1E-12	2.2E-14	2.1E-14	1.5E-13	4.9E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-09	2.3E-09	0.0E+00	1.4E-11	6.7E-12	1.1E-14	3.2E-13	7.3E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	4.9E-12	0.0E+00	2.0E-12	1.6E-13	8.8E-14	5.2E-14	2.5E-11
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-13	3.6E-12	0.0E+00	1.7E-12	1.1E-12	1.3E-13	8.7E-14	6.9E-12
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-08	1.5E-11	0.0E+00	4.0E-12	3.0E-13	3.6E-13	3.8E-14	8.2E-08
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-11	7.3E-09	0.0E+00	2.5E-11	3.6E-13	3.1E-14	1.6E-12	7.4E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-09	7.0E-07	0.0E+00	6.5E-09	2.6E-10	8.2E-10	2.4E-10	7.1E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-06	4.1E-08	0.0E+00	4.0E-10	1.6E-11	5.0E-11	1.5E-11	9.2E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-05	5.3E-07	0.0E+00	5.5E-09	2.2E-10	7.0E-10	2.1E-10	5.0E-05

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 5.9E-05 1.3E-06 0.0E+00 1.3E-08 5.0E-10 1.6E-09 4.7E-10 6.1E-05

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 8

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 300 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-07	4.0E-09	0.0E+00	1.7E-11	7.1E-14	7.1E-14	6.0E-13	1.6E-07
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-08	6.0E-09	0.0E+00	4.1E-11	2.0E-11	3.1E-14	1.1E-12	1.9E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-10	5.7E-11	0.0E+00	3.4E-11	2.8E-12	1.4E-12	1.1E-12	3.0E-10
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-12	4.2E-11	0.0E+00	2.3E-11	1.8E-11	2.0E-12	1.9E-12	9.1E-11
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-07	1.2E-10	0.0E+00	5.4E-11	4.1E-12	4.6E-12	5.6E-13	6.6E-07
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-10	2.0E-08	0.0E+00	8.3E-11	1.8E-12	1.3E-13	1.1E-11	2.1E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-09	6.0E-07	0.0E+00	5.9E-09	2.5E-10	7.6E-10	2.7E-10	6.1E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-06	3.5E-08	0.0E+00	3.6E-10	1.5E-11	4.7E-11	1.7E-11	7.9E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05	4.5E-07	0.0E+00	5.1E-09	2.1E-10	6.5E-10	2.3E-10	4.3E-05

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 5.2E-05 1.1E-06 0.0E+00 1.2E-08 5.3E-10 1.5E-09 5.4E-10 5.3E-05

0*Sum of dose from all releases and from primary contamination.

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Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
O Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-07	8.3E-09	0.0E+00	3.6E-11	1.4E-13	1.5E-13	1.3E-12	3.3E-07
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-08	1.2E-08	0.0E+00	8.1E-11	4.0E-11	6.0E-14	2.1E-12	3.6E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-09	5.0E-10	0.0E+00	3.9E-10	3.2E-11	1.5E-11	1.4E-11	2.8E-09
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-11	3.7E-10	0.0E+00	2.3E-10	2.0E-10	2.1E-11	2.3E-11	8.7E-10
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-06	8.8E-10	0.0E+00	5.8E-10	4.4E-11	4.7E-11	6.2E-12	4.9E-06
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-10	5.3E-08	0.0E+00	3.4E-10	1.1E-11	7.1E-13	8.4E-11	5.4E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-09	3.6E-07	0.0E+00	3.5E-09	1.5E-10	4.5E-10	1.6E-10	3.6E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-06	2.1E-08	0.0E+00	2.1E-10	9.1E-12	2.8E-11	1.0E-11	4.7E-06
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-05	2.7E-07	0.0E+00	3.0E-09	1.3E-10	3.9E-10	1.4E-10	2.6E-05
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-05	7.2E-07	0.0E+00	8.4E-09	6.2E-10	9.5E-10	4.4E-10	3.6E-05
0*Sum of dose from all releases and from primary contamination.																

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
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Time = 3.000E+00	8
Time = 1.000E+01	10
Time = 3.000E+01	12
Time = 1.000E+02	14
Time = 3.000E+02	16
Time = 1.000E+03	18

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)

DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)
DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

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T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
	DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
	DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
	DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
	DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
	DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
	DCSF	Soil ingestion, slope factors, 1/(pCi):			
	DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
	DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
	DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
	DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
	DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)

DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTOR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTOR(1,2)

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	3.46E-18	0	3.71E-20	0	1.59E-22	0	9.06E-24	0	6.07E-25	0	1.21E-25	0	3.50E-18	0
Pa-231	2.09E-17	0	1.13E-18	0	4.72E-21	0	1.76E-21	0	6.70E-24	0	3.02E-24	0	2.20E-17	0
Pb-210	5.39E-24	0	2.25E-24	0	2.30E-25	0	1.46E-26	0	1.35E-26	0	2.07E-28	0	7.89E-24	0

Po-210	3.76E-26	0	6.00E-25	0	1.26E-25	0	3.39E-26	0	8.38E-27	0	1.31E-28	0	8.06E-25	0
Ra-226	2.58E-18	0	4.56E-22	0	1.23E-23	0	8.46E-25	0	2.25E-24	0	8.90E-27	0	2.58E-18	0
Th-230	3.27E-19	0	3.41E-18	0	1.66E-20	0	1.62E-22	0	2.38E-23	0	1.08E-23	0	3.75E-18	0
U-234	2.36E-15	0	6.06E-13	1	2.90E-15	0	7.98E-17	0	3.34E-16	0	1.26E-18	0	6.11E-13	1
U-235	7.78E-12	16	3.50E-14	0	1.91E-16	0	5.24E-18	0	2.19E-17	0	8.30E-20	0	7.82E-12	16
U-238	3.92E-11	82	4.54E-13	1	3.23E-15	0	8.87E-17	0	3.71E-16	0	1.40E-18	0	3.97E-11	82
<hr/>														
Total	4.70E-11	98	1.09E-12	2	6.32E-15	0	1.74E-16	0	7.27E-16	0	2.75E-18	0	4.81E-11	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
<hr/>									
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water														
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.36E-15	0	6.06E-13	1	0.00E+00	0	2.90E-15	0	7.98E-17	0	3.34E-16	0	1.26E-18	0	6.11E-13	1

U-235	7.78E-12	16	3.50E-14	0	0.00E+00	0	1.91E-16	0	5.24E-18	0	2.19E-17	0	8.30E-20	0	7.82E-12	16
U-238	3.92E-11	82	4.54E-13	1	0.00E+00	0	3.23E-15	0	8.87E-17	0	3.71E-16	0	1.40E-18	0	3.97E-11	82
Total	4.70E-11	98	1.09E-12	2	0.00E+00	0	6.32E-15	0	1.74E-16	0	7.27E-16	0	2.75E-18	0	4.81E-11	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 6

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.19E-17	0	2.35E-19	0	1.01E-21	0	2.99E-23	0	3.88E-24	0	1.46E-24	0	2.22E-17	0
Pa-231	6.26E-17	0	3.38E-18	0	1.44E-20	0	5.63E-21	0	1.65E-23	0	1.92E-23	0	6.60E-17	0
Pb-210	6.92E-23	0	2.89E-23	0	3.04E-24	0	2.03E-25	0	1.74E-25	0	4.62E-27	0	1.01E-22	0
Po-210	7.52E-25	0	1.20E-23	0	2.61E-24	0	8.90E-25	0	1.71E-25	0	4.20E-27	0	1.64E-23	0
Ra-226	1.65E-17	0	2.91E-21	0	8.32E-23	0	6.16E-24	0	1.48E-23	0	1.09E-25	0	1.65E-17	0
Th-230	9.79E-19	0	1.02E-17	0	5.00E-20	0	4.45E-22	0	5.86E-23	0	6.91E-23	0	1.13E-17	0
U-234	2.36E-15	0	6.05E-13	1	2.91E-15	0	8.09E-17	0	3.36E-16	0	3.76E-18	0	6.11E-13	1
U-235	7.78E-12	16	3.50E-14	0	1.91E-16	0	5.31E-18	0	2.21E-17	0	2.47E-19	0	7.81E-12	16
U-238	3.92E-11	82	4.53E-13	1	3.24E-15	0	8.99E-17	0	3.73E-16	0	4.18E-18	0	3.96E-11	82
Total	4.70E-11	98	1.09E-12	2	6.34E-15	0	1.76E-16	0	7.31E-16	0	8.19E-18	0	4.81E-11	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 7

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 1 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.37E-15	0	6.05E-13	1	0.00E+00	0	2.91E-15	0	8.09E-17	0	3.36E-16	0	3.76E-18	0	6.11E-13	1
U-235	7.78E-12	16	3.50E-14	0	0.00E+00	0	1.91E-16	0	5.32E-18	0	2.21E-17	0	2.47E-19	0	7.81E-12	16
U-238	3.92E-11	82	4.53E-13	1	0.00E+00	0	3.24E-15	0	8.99E-17	0	3.73E-16	0	4.18E-18	0	3.96E-11	82
Total	4.70E-11	98	1.09E-12	2	0.00E+00	0	6.34E-15	0	1.76E-16	0	7.31E-16	0	8.19E-18	0	4.81E-11	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.12E-16	0	1.20E-18	0	5.20E-21	0	7.92E-23	0	2.00E-23	0	1.54E-23	0	1.13E-16	0
Pa-231	1.46E-16	0	7.88E-18	0	3.47E-20	0	1.40E-20	0	3.54E-23	0	9.85E-23	0	1.54E-16	0
Pb-210	7.62E-22	0	3.18E-22	0	3.47E-23	0	2.34E-24	0	1.95E-24	0	1.02E-25	0	1.12E-21	0
Po-210	1.17E-23	0	1.87E-22	0	4.10E-23	0	1.52E-23	0	2.70E-24	0	1.27E-25	0	2.58E-22	0
Ra-226	8.57E-17	0	1.51E-20	0	4.89E-22	0	3.73E-23	0	8.14E-23	0	1.20E-24	0	8.57E-17	0
Th-230	2.28E-18	0	2.38E-17	0	1.17E-19	0	1.01E-21	0	1.24E-22	0	3.58E-22	0	2.62E-17	0
U-234	2.35E-15	0	6.04E-13	1	2.94E-15	0	8.31E-17	0	3.40E-16	0	8.65E-18	0	6.10E-13	1
U-235	7.77E-12	16	3.49E-14	0	1.93E-16	0	5.46E-18	0	2.23E-17	0	5.68E-19	0	7.80E-12	16
U-238	3.91E-11	82	4.53E-13	1	3.26E-15	0	9.24E-17	0	3.78E-16	0	9.62E-18	0	3.96E-11	82
Total	4.69E-11	98	1.09E-12	2	6.39E-15	0	1.81E-16	0	7.40E-16	0	1.88E-17	0	4.80E-11	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t = 3 years								
Radionuclides								
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.44E-15	0	6.04E-13	1	0.00E+00	0	2.94E-15	0	8.31E-17	0	3.40E-16	0	8.65E-18	0	6.10E-13	1
U-235	7.77E-12	16	3.49E-14	0	0.00E+00	0	1.93E-16	0	5.47E-18	0	2.23E-17	0	5.69E-19	0	7.80E-12	16
U-238	3.91E-11	82	4.53E-13	1	0.00E+00	0	3.26E-15	0	9.24E-17	0	3.78E-16	0	9.62E-18	0	3.96E-11	82
Total	4.69E-11	98	1.09E-12	2	0.00E+00	0	6.39E-15	0	1.81E-16	0	7.40E-16	0	1.88E-17	0	4.80E-11	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 10

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years
From releases to ground water and to surface water

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	3.11E-15	0	6.01E-13	1	0.00E+00	0	3.01E-15	0	9.03E-17	0	3.53E-16	0	2.46E-17	0	6.08E-13	1
U-235	7.73E-12	16	3.48E-14	0	0.00E+00	0	1.98E-16	0	5.98E-18	0	2.32E-17	0	1.62E-18	0	7.76E-12	16
U-238	3.89E-11	82	4.50E-13	1	0.00E+00	0	3.35E-15	0	1.00E-16	0	3.93E-16	0	2.73E-17	0	3.94E-11	82
Total	4.66E-11	98	1.09E-12	2	0.00E+00	0	6.55E-15	0	1.97E-16	0	7.69E-16	0	5.36E-17	0	4.77E-11	100

File : SHIPROCK ALT1 OFFSITE RESC.ROF

[illegible]

Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
<hr/>														
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	6.27E-15	0	6.72E-17	0	3.18E-19	0	1.55E-21	0	1.27E-21	0	5.50E-21	0	6.34E-15	0
Pa-231	1.24E-15	0	6.73E-17	0	4.12E-19	0	1.86E-19	0	3.47E-22	0	6.04E-21	0	1.31E-15	0
Pb-210	3.95E-19	0	1.65E-19	0	2.58E-20	0	1.90E-21	0	1.27E-21	0	4.02E-22	0	5.89E-19	0
Po-210	8.73E-21	0	1.39E-19	0	3.26E-20	0	1.58E-20	0	2.30E-21	0	7.01E-22	0	1.99E-19	0
Ra-226	6.33E-15	0	1.12E-18	0	8.90E-20	0	6.81E-21	0	9.95E-21	0	6.83E-22	0	6.33E-15	0
Th-230	1.97E-17	0	2.06E-16	0	1.06E-18	0	1.11E-20	0	1.14E-21	0	2.51E-20	0	2.26E-16	0
U-234	2.31E-15	0	5.92E-13	1	3.17E-15	0	1.07E-16	0	3.83E-16	0	6.16E-17	0	5.98E-13	1
U-235	7.61E-12	16	3.42E-14	0	2.08E-16	0	7.02E-18	0	2.52E-17	0	4.05E-18	0	7.64E-12	16
U-238	3.83E-11	81	4.44E-13	1	3.53E-15	0	1.19E-16	0	4.26E-16	0	6.85E-17	0	3.88E-11	82
<hr/>														
Total	4.60E-11	98	1.07E-12	2	6.91E-15	0	2.33E-16	0	8.34E-16	0	1.34E-16	0	4.70E-11	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 30 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
<hr/>								
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

0

From releases to ground water and to surface water

0

Ground Fish Radon Plant Meat Milk Soil Water

Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***
Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
U-234	8.66E-15	0	5.92E-13	1	0.00E+00	0	3.17E-15	0	1.07E-16	0	3.83E-16	0	6.16E-17	0	6.04E-13 1
U-235	7.62E-12	16	3.44E-14	0	0.00E+00	0	2.09E-16	0	7.20E-18	0	2.52E-17	0	4.06E-18	0	7.65E-12 16
U-238	3.83E-11	81	4.44E-13	1	0.00E+00	0	3.53E-15	0	1.19E-16	0	4.26E-16	0	6.85E-17	0	3.88E-11 82
Total	4.60E-11	98	1.07E-12	2	0.00E+00	0	6.91E-15	0	2.33E-16	0	8.34E-16	0	1.34E-16	0	4.70E-11 100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 14

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

0 From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Radio-Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	3.76E-14	0	4.03E-16	0	2.07E-18	0	8.82E-21	0	8.54E-21	0	6.24E-20	0	3.80E-14	0
Pa-231	3.89E-15	0	2.10E-16	0	1.78E-18	0	8.53E-19	0	1.36E-21	0	4.10E-20	0	4.10E-15	0
Pb-210	9.03E-18	0	3.77E-18	0	9.22E-19	0	7.31E-20	0	4.07E-20	0	2.42E-20	0	1.39E-17	0
Po-210	2.07E-19	0	3.30E-18	0	8.69E-19	0	5.54E-19	0	6.78E-20	0	4.37E-20	0	5.04E-18	0
Ra-226	6.60E-14	0	1.17E-17	0	1.96E-18	0	1.49E-19	0	1.81E-19	0	1.88E-20	0	6.60E-14	0
Th-230	6.32E-17	0	6.60E-16	0	3.74E-18	0	5.38E-20	0	4.69E-21	0	2.35E-19	0	7.27E-16	0
U-234	2.19E-15	0	5.61E-13	1	3.39E-15	0	1.34E-16	0	4.27E-16	0	1.27E-16	0	5.68E-13	1
U-235	7.22E-12	16	3.25E-14	0	2.23E-16	0	8.79E-18	0	2.81E-17	0	8.33E-18	0	7.25E-12	16
U-238	3.64E-11	81	4.21E-13	1	3.77E-15	0	1.49E-16	0	4.75E-16	0	1.41E-16	0	3.68E-11	82
Total	4.37E-11	98	1.02E-12	2	7.39E-15	0	2.93E-16	0	9.30E-16	0	2.77E-16	0	4.47E-11	100

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 100 years
Radionuclides

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.82E-14	0	5.62E-13	1	0.00E+00	0	3.39E-15	0	1.35E-16	0	4.27E-16	0	1.27E-16	0
U-235	7.26E-12	16	3.31E-14	0	0.00E+00	0	2.26E-16	0	9.66E-18	0	2.81E-17	0	8.44E-18	0
U-238	3.64E-11	81	4.21E-13	1	0.00E+00	0	3.77E-15	0	1.49E-16	0	4.75E-16	0	1.41E-16	0
Total	4.37E-11	98	1.02E-12	2	0.00E+00	0	7.39E-15	0	2.93E-16	0	9.30E-16	0	2.77E-16	0

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 16

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water											
	Ground		Fish		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)									
	Ground		Inhalation		Plant		Meat		Milk	
	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.22E-13	0	1.31E-15	0	6.96E-18	0	2.89E-20	0	2.91E-20	0

Pa-231	9.97E-15	0	5.39E-16	0	5.26E-18	0	2.58E-18	0	3.89E-21	0	1.37E-19	0	1.05E-14	0
Pb-210	1.05E-16	0	4.38E-17	0	1.58E-17	0	1.30E-18	0	6.49E-19	0	5.11E-19	0	1.67E-16	0
Po-210	2.43E-18	0	3.87E-17	0	1.16E-17	0	9.26E-18	0	9.99E-19	0	9.32E-19	0	6.39E-17	0
Ra-226	5.26E-13	1	9.30E-17	0	2.69E-17	0	2.04E-18	0	2.28E-18	0	2.78E-19	0	5.26E-13	1
Th-230	1.76E-16	0	1.83E-15	0	1.25E-17	0	2.64E-19	0	1.96E-20	0	1.63E-18	0	2.02E-15	0
U-234	1.89E-15	0	4.83E-13	1	3.09E-15	0	1.31E-16	0	3.98E-16	0	1.42E-16	0	4.88E-13	1
U-235	6.21E-12	16	2.79E-14	0	2.03E-16	0	8.59E-18	0	2.62E-17	0	9.34E-18	0	6.23E-12	16
U-238	3.13E-11	80	3.62E-13	1	3.44E-15	0	1.45E-16	0	4.43E-16	0	1.58E-16	0	3.16E-11	81
Total	3.81E-11	98	8.76E-13	2	6.82E-15	0	3.00E-16	0	8.71E-16	0	3.13E-16	0	3.90E-11	100

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 300 years
Radionuclides

[illegible]

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

From releases to ground water and to surface water

From releases to ground water and to surface water

[illegible]

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

[illegible]

U-234	5.28E-13	1	4.84E-13	1	0.00E+00	0	3.16E-15	0	1.43E-16	0	4.02E-16	0	1.45E-16	0	1.02E-12	3
U-235	6.34E-12	16	2.98E-14	0	0.00E+00	0	2.16E-16	0	1.12E-17	0	2.62E-17	0	9.72E-18	0	6.37E-12	16
U-238	3.13E-11	80	3.62E-13	1	0.00E+00	0	3.44E-15	0	1.45E-16	0	4.43E-16	0	1.58E-16	0	3.16E-11	81
Total	3.81E-11	98	8.76E-13	2	0.00E+00	0	6.82E-15	0	3.00E-16	0	8.71E-16	0	3.13E-16	0	3.90E-11	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 18

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

0	From releases to ground water and to surface water													
0	Ground		Fish		Plant		Meat		Milk		Soil		Water	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0	Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t = 1000 years													
0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
0	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	2.57E-13	1	2.75E-15	0	1.46E-17	0	5.88E-20	0	6.10E-20	0	5.12E-19	0	2.60E-13	1
Pa-231	1.94E-14	0	1.05E-15	0	1.03E-17	0	5.07E-18	0	7.62E-21	0	2.71E-19	0	2.05E-14	0
Pb-210	9.16E-16	0	3.82E-16	0	1.78E-16	0	1.49E-17	0	7.06E-18	0	6.33E-18	0	1.50E-15	0
Po-210	2.12E-17	0	3.38E-16	0	1.14E-16	0	1.03E-16	0	1.03E-17	0	1.16E-17	0	5.98E-16	0
Ra-226	3.97E-12	15	7.01E-16	0	2.87E-16	0	2.18E-17	0	2.34E-17	0	3.07E-18	0	3.97E-12	15
Th-230	4.58E-16	0	4.76E-15	0	5.06E-17	0	1.65E-18	0	1.06E-19	0	1.26E-17	0	5.28E-15	0
U-234	1.11E-15	0	2.84E-13	1	1.83E-15	0	7.75E-17	0	2.35E-16	0	8.49E-17	0	2.88E-13	1
U-235	3.66E-12	14	1.64E-14	0	1.20E-16	0	5.10E-18	0	1.55E-17	0	5.58E-18	0	3.67E-12	14
U-238	1.84E-11	69	2.13E-13	1	2.03E-15	0	8.63E-17	0	2.62E-16	0	9.45E-17	0	1.86E-11	69

Total	2.63E-11	98	5.24E-13	2	4.64E-15	0	3.15E-16	0	5.54E-16	0	2.19E-16	0	2.68E-11	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:52 Page 19
Risk Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESC.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1000 years
Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	3.96E-12	15	2.90E-13	1	0.00E+00	0	2.45E-15	0	2.18E-16	0	2.76E-16	0	1.18E-16	0	4.26E-12	16
U-235	3.93E-12	15	2.02E-14	0	0.00E+00	0	1.45E-16	0	1.02E-17	0	1.56E-17	0	6.37E-18	0	3.95E-12	15
U-238	1.84E-11	69	2.14E-13	1	0.00E+00	0	2.04E-15	0	8.65E-17	0	2.63E-16	0	9.47E-17	0	1.86E-11	69
Total	2.63E-11	98	5.24E-13	2	0.00E+00	0	4.64E-15	0	3.15E-16	0	5.54E-16	0	2.19E-16	0	2.68E-11	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Attachment D-14-10a. Offsite Receptor Location 1, Resident Farmer Tap Water Inputs, Chemical Risk, Alternative 1

[/HTML"Output to XLS](/tmp/Farmer_chem_raisk16MAY2023_risk1139235.xlsx)

[/HTML"Output to PDF</div>](/tmp/Farmer_chem_raisk16MAY2023_risk1139235.pdf)

Variable	Farmer Contaminated Water Default Value	Site-Specific Value
BW_{far-a} (body weight - adult) kg	80	80
BW_{far-c} (body weight - child) kg	15	15
$CF_{far-beef}$ (contaminated intake fraction - beef) unitless	1	1
$CF_{far-dairy}$ (contaminated intake fraction - dairy) unitless	1	1
$CF_{far-produce}$ (contaminated intake fraction) unitless	1	1
ED_{far-a} (exposure duration - adult) y	34	34
ED_{far-c} (exposure duration - child) y	6	6
EF_{far-a} (exposure frequency - adult) day/y	350	350
EF_{far-c} (exposure frequency - child) day/y	350	350
$IFB_{far-adj}$ (age-adjusted beef intake rate) mg-year/kg-day	32091500	32091500
$IFD_{far-adj}$ (age-adjusted dairy intake rate) mg-year/kg-day	115213000	115213000
$IFF_{far-adj}$ (age-adjusted fruit intake rate) mg-year/kg-day	35833000	35833000
$IFV_{far-adj}$ (age-adjusted vegetable intake rate) mg-year/kg-day	24535875	24535875
IRB_{far-a} (beef intake rate - adult) mg/day	178000	178000
IRB_{far-c} (beef intake rate - child) mg/day	40100	40100
IRD_{far-a} (dairy intake rate - adult) mg/day	445600	445600
IRD_{far-c} (dairy intake rate - child) mg/day	349500	349500
IRF_{far-a} (fruit intake rate - adult) mg/day	176800	176800
IRF_{far-c} (fruit intake rate - child) mg/day	68100	68100
IRV_{far-a} (vegetable intake rate - adult) mg/day	125700	125700
IRV_{far-c} (vegetable intake rate - child) mg/day	41700	41700
LT (lifetime - resident) yr	70	70
$MLF_{pasture}$ (pasture plant mass loading factor) unitless	0.25	0.25
$MLF_{produce}$ (produce plant mass loading factor) unitless	0.0135	0.0135
F (irrigation period) unitless	0.25	0.25
I_f (interception fraction) unitless	0.42	0.42
I_r (Irrigation rate) L/m ² -day	3.62	3.62
λ_{HL} (soil leaching rate) 1/day	0.000027	0.000027
P (area density for root zone) kg/m ²	240	240
Q_{w-beef} (beef water intake rate) L/day	53	53
$Q_{w-dairy}$ (dairy water intake rate) L/day	92	92
T (translocation factor) unitless	1	1
t_b (long term deposition and buildup) day	10950	10950
t_v (above ground exposure time) day	60	60
t_w (weathering half-life) day	14	14
Y_v (plant yield - wet) kg/m ²	2	2

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Attachment D-14-10b. Resident Farmer Exposures to Groundwater Used as Tap Water at Offsite Receptor Location 1, Chemical Risk, Alternative 1

[illegible]

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

Output generated 16MAY2023:05:28:43

Table continued

[illegible]

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Dose Conversion Factor (and Related) Parameter Summary
 Current Library: DCFPAK3.02
 Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)

DCSF	Pa-234	(Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT (11)
DCSF	Pa-234m	(Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT (12)
DCSF	Pb-210	(Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT (13)
DCSF	Pb-211	(Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT (14)
DCSF	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT (15)
DCSF	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT (16)
DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:				
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/28/2023 12:58	Page 3	
	Parent Dose Report				
	Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1				
	File : SHIPROCK_ALT1_OFFSITE RESD.ROF				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D		6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D		2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1		2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210		1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D		3.528E-02	3.528E-02	DCF2 (6)

DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)
DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 4

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)

TF					
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF					
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF					
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF					
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF					
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 5

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				

TF	Pa-231	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF					
TF	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF					
TF	Pb-210+D1	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF					
TF	Po-210	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF					
TF	Ra-226+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF					
TF	Th-230	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF					
TF	U-234	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF					
TF	U-235+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF					
TF	U-238	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF					
TF	U-238+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 6
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)

TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210, fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210, crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)
TF				
TF	Ra-226+D, fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D, crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230, fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230, crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234, fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D, fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238, fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D, fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)

VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (8)
VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 8
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)

DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)

DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)
DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)

DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach(1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY(1)
LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-5.028E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-4.715E+02	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	-1.433E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	-1.113E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-5.000E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-4.687E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	-1.739E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	-1.419E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-4.639E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-3.639E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	-1.224E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	-2.241E+01	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-4.667E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-3.667E+02	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	-2.196E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	-1.196E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-5.028E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-4.639E+02	6.562E+01	---	DWELLXY(2)

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Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	-1.100E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	-6.130E+01	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)

TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T (2)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+00	3.000E+00	---	T (3)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+01	6.000E+00	---	T (4)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+01	1.200E+01	---	T (5)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+02	3.000E+01	---	T (6)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+02	7.500E+01	---	T (7)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+03	1.750E+02	---	T (8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T (9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T (10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	7.340E-07	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV

PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	9.999E+03	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)

AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF (3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG (3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF (3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN (3)
AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB (3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY (3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP (3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG (3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC (3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF (3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO (4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT (4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN (4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF (4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG (4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF (4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN (4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB (4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY (4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP (4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG (4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC (4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF (4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREADWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHODWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name

AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX
AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
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AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,1)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ (4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ (4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ (5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ (5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ (6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ (1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ (1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ (1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ (1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ (1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ (2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ (2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ (2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ (2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ (2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ (3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ (3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ (3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,2)

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)

AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)

AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)

AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ (2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ (2,2,5)
AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ (2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ (2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ (2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ (3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ (3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ (3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ (3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ (4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ (4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ (5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ (5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ (6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,5)
AIRT	Joint Frequency in ESE Sector				

AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)
AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ (6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,6)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ (1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ (1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ (1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ (1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ (1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ (2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ (2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ (2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ (2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ (3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ (3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ (3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ (4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ (4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ (5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ (5,4,7)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	AIRT	Joint Frequency in SSE Sector				
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
	AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
	AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
	AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
	AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)

AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,8)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ (5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ (1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ (1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ (1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ (1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ (1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ (2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ (2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ (2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ (2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ (2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ (3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ (3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ (3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ (3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
AIRT	Joint Frequency in S Sector				

AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)

AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)

AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)
AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0		User		RESRAD	
Menu	Parameter	Input	Default	computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				

AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)
AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)

AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT		Joint Frequency in WNW Sector				
AIRT		for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT		for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT		for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT		for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT		for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT		for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT		Joint Frequency in WNW Sector				
AIRT		for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT		for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT		for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT		for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT		for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT		for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT		Joint Frequency in WNW Sector				
AIRT		for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT		for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT		for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT		for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)

AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)

AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,15)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				

AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-1.000E+00	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	0.000E+00	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
0 = (total porosity + distribution coefficient*dry bulk density) / total porosity					

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	
Menu	Parameter	Input	Default	computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)

USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ (1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR(1)
WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACTCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Intercept-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)

LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI(1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI(1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI(2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI(2,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	7.340E-07	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	7.340E-07	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)

SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA (6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA (7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA (8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA (9)
SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA (10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA (11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA (12)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 35

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	6.308E+01	1.325E+01	---	RAD_SHAPE (13)
SEXT	Outer annular radius (m), ring 14:	1.262E+02	2.650E+01	---	RAD_SHAPE (14)
SEXT	Outer annular radius (m), ring 15:	1.892E+02	3.975E+01	---	RAD_SHAPE (15)
SEXT	Outer annular radius (m), ring 16:	2.523E+02	5.300E+01	---	RAD_SHAPE (16)
SEXT	Outer annular radius (m), ring 17:	3.154E+02	6.625E+01	---	RAD_SHAPE (17)
SEXT	Outer annular radius (m), ring 18:	3.785E+02	7.950E+01	---	RAD_SHAPE (18)
SEXT	Outer annular radius (m), ring 19:	4.416E+02	9.275E+01	---	RAD_SHAPE (19)
SEXT	Outer annular radius (m), ring 20:	5.047E+02	1.060E+02	---	RAD_SHAPE (20)
SEXT	Outer annular radius (m), ring 21:	5.678E+02	1.192E+02	---	RAD_SHAPE (21)
SEXT	Outer annular radius (m), ring 22:	6.308E+02	1.325E+02	---	RAD_SHAPE (22)
SEXT	Outer annular radius (m), ring 23:	6.939E+02	1.458E+02	---	RAD_SHAPE (23)
SEXT	Outer annular radius (m), ring 24:	7.570E+02	1.590E+02	---	RAD_SHAPE (24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA (13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA (14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA (15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA (16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA (17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA (18)
SEXT	Ring 19	0.000E+00	2.000E-01	---	FRACA (19)
SEXT	Ring 20	2.400E-03	1.700E-01	---	FRACA (20)
SEXT	Ring 21	4.500E-02	1.500E-01	---	FRACA (21)
SEXT	Ring 22	6.000E-02	1.300E-01	---	FRACA (22)
SEXT	Ring 23	5.300E-02	1.200E-01	---	FRACA (23)
SEXT	Ring 24	2.200E-02	5.200E-02	---	FRACA (24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	5.035E+02	5.035E+02	---	RAD_SHAPE (25)
SEXT	Outer annular radius (m), ring 26:	5.259E+02	5.259E+02	---	RAD_SHAPE (26)
SEXT	Outer annular radius (m), ring 27:	5.483E+02	5.483E+02	---	RAD_SHAPE (27)
SEXT	Outer annular radius (m), ring 28:	5.707E+02	5.707E+02	---	RAD_SHAPE (28)
SEXT	Outer annular radius (m), ring 29:	5.931E+02	5.931E+02	---	RAD_SHAPE (29)

SEXT	Outer annular radius (m), ring 30:	6.222E+02	6.222E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	6.514E+02	6.514E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	6.805E+02	6.805E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	7.097E+02	7.097E+02	---	RAD_SHAPE(33)
SEXT	Outer annular radius (m), ring 34:	7.317E+02	7.317E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	7.538E+02	7.538E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	7.758E+02	7.758E+02	---	RAD_SHAPE(36)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 36

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.153E-02	1.153E-02	---	FRACA(26)
SEXT	Ring 27	3.075E-02	3.075E-02	---	FRACA(27)
SEXT	Ring 28	4.513E-02	4.513E-02	---	FRACA(28)
SEXT	Ring 29	5.689E-02	5.689E-02	---	FRACA(29)
SEXT	Ring 30	6.039E-02	6.039E-02	---	FRACA(30)
SEXT	Ring 31	5.712E-02	5.712E-02	---	FRACA(31)
SEXT	Ring 32	5.420E-02	5.420E-02	---	FRACA(32)
SEXT	Ring 33	5.159E-02	5.159E-02	---	FRACA(33)
SEXT	Ring 34	3.907E-02	3.907E-02	---	FRACA(34)
SEXT	Ring 35	2.022E-02	2.022E-02	---	FRACA(35)
SEXT	Ring 36	6.192E-03	6.192E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	5.094E+02	5.094E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	5.343E+02	5.343E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	5.591E+02	5.591E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	5.840E+02	5.840E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	6.088E+02	6.088E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	6.349E+02	6.349E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	6.609E+02	6.609E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	6.870E+02	6.870E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	7.131E+02	7.131E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	7.378E+02	7.378E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	7.624E+02	7.624E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	7.871E+02	7.871E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.106E-02	1.106E-02	---	FRACA(38)
SEXT	Ring 39	2.984E-02	2.984E-02	---	FRACA(39)
SEXT	Ring 40	4.438E-02	4.438E-02	---	FRACA(40)
SEXT	Ring 41	5.642E-02	5.642E-02	---	FRACA(41)
SEXT	Ring 42	6.023E-02	6.023E-02	---	FRACA(42)

SEXT	Ring 43	5.723E-02	5.723E-02	---	FRACA (43)
SEXT	Ring 44	5.455E-02	5.455E-02	---	FRACA (44)
SEXT	Ring 45	5.213E-02	5.213E-02	---	FRACA (45)
SEXT	Ring 46	3.987E-02	3.987E-02	---	FRACA (46)
SEXT	Ring 47	2.098E-02	2.098E-02	---	FRACA (47)
SEXT	Ring 48	6.450E-03	6.450E-03	---	FRACA (48)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 37

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	4.202E+02	4.202E+02	---	RAD_SHAPE (49)
SEXT	Outer annular radius (m), ring 50:	4.473E+02	4.473E+02	---	RAD_SHAPE (50)
SEXT	Outer annular radius (m), ring 51:	4.745E+02	4.745E+02	---	RAD_SHAPE (51)
SEXT	Outer annular radius (m), ring 52:	5.016E+02	5.016E+02	---	RAD_SHAPE (52)
SEXT	Outer annular radius (m), ring 53:	5.229E+02	5.229E+02	---	RAD_SHAPE (53)
SEXT	Outer annular radius (m), ring 54:	5.441E+02	5.441E+02	---	RAD_SHAPE (54)
SEXT	Outer annular radius (m), ring 55:	5.654E+02	5.654E+02	---	RAD_SHAPE (55)
SEXT	Outer annular radius (m), ring 56:	5.866E+02	5.866E+02	---	RAD_SHAPE (56)
SEXT	Outer annular radius (m), ring 57:	6.078E+02	6.078E+02	---	RAD_SHAPE (57)
SEXT	Outer annular radius (m), ring 58:	6.291E+02	6.291E+02	---	RAD_SHAPE (58)
SEXT	Outer annular radius (m), ring 59:	6.576E+02	6.576E+02	---	RAD_SHAPE (59)
SEXT	Outer annular radius (m), ring 60:	6.862E+02	6.862E+02	---	RAD_SHAPE (60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA (49)
SEXT	Ring 50	1.859E-02	1.859E-02	---	FRACA (50)
SEXT	Ring 51	4.679E-02	4.679E-02	---	FRACA (51)
SEXT	Ring 52	6.493E-02	6.493E-02	---	FRACA (52)
SEXT	Ring 53	7.075E-02	7.075E-02	---	FRACA (53)
SEXT	Ring 54	6.747E-02	6.747E-02	---	FRACA (54)
SEXT	Ring 55	6.451E-02	6.451E-02	---	FRACA (55)
SEXT	Ring 56	6.182E-02	6.182E-02	---	FRACA (56)
SEXT	Ring 57	5.935E-02	5.935E-02	---	FRACA (57)
SEXT	Ring 58	5.709E-02	5.709E-02	---	FRACA (58)
SEXT	Ring 59	3.786E-02	3.786E-02	---	FRACA (59)
SEXT	Ring 60	1.003E-02	1.003E-02	---	FRACA (60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	4.499E+02	4.499E+02	---	RAD_SHAPE (61)
SEXT	Outer annular radius (m), ring 62:	4.785E+02	4.785E+02	---	RAD_SHAPE (62)
SEXT	Outer annular radius (m), ring 63:	5.071E+02	5.071E+02	---	RAD_SHAPE (63)
SEXT	Outer annular radius (m), ring 64:	5.357E+02	5.357E+02	---	RAD_SHAPE (64)
SEXT	Outer annular radius (m), ring 65:	5.644E+02	5.644E+02	---	RAD_SHAPE (65)
SEXT	Outer annular radius (m), ring 66:	5.858E+02	5.858E+02	---	RAD_SHAPE (66)

SEXT	Outer annular radius (m), ring 67:	6.073E+02	6.073E+02	---	RAD_SHAPE (67)
SEXT	Outer annular radius (m), ring 68:	6.287E+02	6.287E+02	---	RAD_SHAPE (68)
SEXT	Outer annular radius (m), ring 69:	6.502E+02	6.502E+02	---	RAD_SHAPE (69)
SEXT	Outer annular radius (m), ring 70:	6.782E+02	6.782E+02	---	RAD_SHAPE (70)
SEXT	Outer annular radius (m), ring 71:	7.061E+02	7.061E+02	---	RAD_SHAPE (71)
SEXT	Outer annular radius (m), ring 72:	7.341E+02	7.341E+02	---	RAD_SHAPE (72)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 38

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.244E-02	1.244E-02	---	FRACA (62)
SEXT	Ring 63	3.345E-02	3.345E-02	---	FRACA (63)
SEXT	Ring 64	4.977E-02	4.977E-02	---	FRACA (64)
SEXT	Ring 65	6.322E-02	6.322E-02	---	FRACA (65)
SEXT	Ring 66	6.748E-02	6.748E-02	---	FRACA (66)
SEXT	Ring 67	6.425E-02	6.425E-02	---	FRACA (67)
SEXT	Ring 68	6.136E-02	6.136E-02	---	FRACA (68)
SEXT	Ring 69	5.875E-02	5.875E-02	---	FRACA (69)
SEXT	Ring 70	4.503E-02	4.503E-02	---	FRACA (70)
SEXT	Ring 71	2.378E-02	2.378E-02	---	FRACA (71)
SEXT	Ring 72	7.295E-03	7.295E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM
RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK(1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK(2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT(1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT(2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT(3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT(4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK(1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK(2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT(1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT(2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT(3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT(4)

Summary of Pathway Selections

Pathway	User Selection
---------	----------------

1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0

Total Dose TDose(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	2.734E-04	2.732E-04	2.728E-04	2.713E-04	2.673E-04	2.541E-04	2.215E-04	1.510E-04
M(t):	1.094E-05	1.093E-05	1.091E-05	1.085E-05	1.069E-05	1.016E-05	8.859E-06	6.041E-06

0Maximum TDose(t): 2.734E-04 mrem/yr at t = 0 years

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	1.37E-08	0	7.96E-07	0	0.00E+00	0	5.69E-09	0	1.81E-10	0	9.22E-10	0	2.52E-12	0	8.16E-07	0
U-235	4.22E-05	15	4.61E-08	0	0.00E+00	0	3.48E-10	0	1.11E-11	0	5.63E-11	0	1.54E-13	0	4.23E-05	15
U-238	2.30E-04	84	5.99E-07	0	0.00E+00	0	4.86E-09	0	1.55E-10	0	7.87E-10	0	2.15E-12	0	2.30E-04	84
Total	2.72E-04	99	1.44E-06	1	0.00E+00	0	1.09E-08	0	3.47E-10	0	1.77E-09	0	4.83E-12	0	2.73E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	1.38E-08	0	7.95E-07	0	0.00E+00	0	5.71E-09	0	1.83E-10	0	9.27E-10	0	7.51E-12	0	8.16E-07	0
U-235	4.22E-05	15	4.61E-08	0	0.00E+00	0	3.49E-10	0	1.13E-11	0	5.67E-11	0	4.59E-13	0	4.22E-05	15
U-238	2.30E-04	84	5.99E-07	0	0.00E+00	0	4.88E-09	0	1.57E-10	0	7.92E-10	0	6.41E-12	0	2.30E-04	84
Total	2.72E-04	99	1.44E-06	1	0.00E+00	0	1.09E-08	0	3.51E-10	0	1.78E-09	0	1.44E-11	0	2.73E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

From releases to ground water and to surface water

	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
--	--------	------	-------	-------	------	------	------	-------

Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

Radio-Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways*
U-234	1.42E-08	7.94E-07	0.00E+00	5.76E-09	1.88E-10	9.38E-10	1.73E-11	8.15E-07
U-235	4.21E-05	4.61E-08	0.00E+00	3.52E-10	1.16E-11	5.73E-11	1.06E-12	4.22E-05
U-238	2.29E-04	5.98E-07	0.00E+00	4.91E-09	1.60E-10	8.00E-10	1.47E-11	2.30E-04
Total	2.71E-04	1.44E-06	0.00E+00	1.10E-08	3.59E-10	1.80E-09	3.31E-11	2.73E-04

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Radio-Nuclide	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
U-234	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-235	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-238	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Radio-Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways*
U-234	1.77E-08	7.90E-07	0.00E+00	5.90E-09	2.01E-10	9.71E-10	4.91E-11	8.15E-07
U-235	4.19E-05	4.60E-08	0.00E+00	3.62E-10	1.27E-11	5.93E-11	3.01E-12	4.20E-05
U-238	2.28E-04	5.95E-07	0.00E+00	5.04E-09	1.72E-10	8.29E-10	4.19E-11	2.29E-04

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

From releases to ground water and to surface water

[illegible]

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	4.72E-08	0	7.80E-07	0	0.00E+00	0	6.23E-09	0	2.32E-10	0	1.05E-09	0	1.23E-10	0	8.35E-07	0
U-235	4.13E-05	15	4.60E-08	0	0.00E+00	0	3.84E-10	0	1.58E-11	0	6.39E-11	0	7.58E-12	0	4.14E-05	15
U-238	2.25E-04	84	5.86E-07	0	0.00E+00	0	5.31E-09	0	1.98E-10	0	8.93E-10	0	1.05E-10	0	2.25E-04	84
Total	2.66E-04	99	1.41E-06	1	0.00E+00	0	1.19E-08	0	4.46E-10	0	2.00E-09	0	2.36E-10	0	2.67E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

$T_{1/2}$ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 100 years

From releases to ground water and to surface water

[illegible]

Total 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 100 years

0 Radio- Nuclide		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)														All Pathways*
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		
		Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	
U-234		3.64E-07	0	7.45E-07	0	0.00E+00	0	6.68E-09	0	2.84E-10	0	1.16E-09	0	2.55E-10	0	
U-235		3.94E-05	15	4.64E-08	0	0.00E+00	0	4.26E-10	0	2.45E-11	0	7.06E-11	0	1.60E-11	0	
U-238		2.13E-04	84	5.56E-07	0	0.00E+00	0	5.68E-09	0	2.41E-10	0	9.86E-10	0	2.16E-10	0	
Total		2.53E-04	99	1.35E-06	1	0.00E+00	0	1.28E-08	0	5.50E-10	0	2.21E-09	0	4.87E-10	0	

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

0		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234		2.81E-06	1	6.55E-07	0	0.00E+00	0	6.27E-09	0	3.01E-10	0	1.08E-09	0	2.98E-10	0	3.47E-06	2
U-235		3.44E-05	16	4.72E-08	0	0.00E+00	0	4.31E-10	0	3.82E-11	0	6.56E-11	0	1.91E-11	0	3.44E-05	16
U-238		1.83E-04	83	4.78E-07	0	0.00E+00	0	5.19E-09	0	2.33E-10	0	9.15E-10	0	2.42E-10	0	1.84E-04	83
Total		2.20E-04	99	1.18E-06	1	0.00E+00	0	1.19E-08	0	5.72E-10	0	2.06E-09	0	5.60E-10	0	2.21E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years																
Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*		
Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.11E-05	14	4.29E-07	0	0.00E+00	0	5.14E-09	0	4.61E-10	0	7.45E-10	0	3.01E-10	0	2.15E-05	14
U-235	2.13E-05	14	4.27E-08	0	0.00E+00	0	3.39E-10	0	5.23E-11	0	3.90E-11	0	1.39E-11	0	2.14E-05	14
U-238	1.08E-04	71	2.82E-07	0	0.00E+00	0	3.07E-09	0	1.39E-10	0	5.43E-10	0	1.45E-10	0	1.08E-04	72
Total	1.50E-04	99	7.54E-07	0	0.00E+00	0	8.55E-09	0	6.53E-10	0	1.33E-09	0	4.60E-10	0	1.51E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Dose/Source Ratios Summed Over All Pathways Parent and Progeny Principal Radionuclide Contributions Indicated												
Parent (i)	Product (j)	Parent and Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g)									
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03		
U-234	U-234	1.000E+00	5.495E-08	5.491E-08	5.484E-08	5.456E-08	5.378E-08	5.107E-08	4.392E-08	2.582E-08		
U-234	Th-230	1.000E+00	2.792E-12	8.373E-12	1.952E-11	5.842E-11	1.684E-10	5.406E-10	1.501E-09	3.913E-09		
U-234	Ra-226+D	1.000E+00	9.220E-13	5.897E-12	3.066E-11	2.719E-10	2.264E-09	2.361E-08	1.882E-07	1.418E-06		
U-234	Pb-210+D	1.000E+00	3.309E-18	4.251E-17	4.682E-16	1.160E-14	2.440E-13	5.641E-12	6.639E-11	5.863E-10		
U-234	Po-210	1.000E+00	8.417E-20	1.726E-18	2.722E-17	8.887E-16	2.124E-14	5.465E-13	7.064E-12	6.700E-11		
U-234	ΣDSR(j)		5.496E-08	5.493E-08	5.489E-08	5.489E-08	5.621E-08	7.523E-08	2.337E-07	1.448E-06		
OU-234	U-234	1.339E-06	7.358E-14	7.353E-14	7.342E-14	7.306E-14	7.201E-14	6.839E-14	5.881E-14	3.457E-14		
U-234	Th-230	1.339E-06	3.738E-18	1.121E-17	2.614E-17	7.822E-17	2.255E-16	7.238E-16	2.010E-15	5.240E-15		
U-234	Ra-226+D	1.339E-06	1.235E-18	7.896E-18	4.105E-17	3.641E-16	3.032E-15	3.161E-14	2.521E-13	1.898E-12		
U-234	Pb-210+D1	1.339E-06	2.180E-23	2.799E-22	3.082E-21	7.628E-20	1.599E-18	3.667E-17	4.269E-16	3.734E-15		
U-234	ΣDSR(j)		7.359E-14	7.355E-14	7.349E-14	7.350E-14	7.527E-14	1.008E-13	3.133E-13	1.942E-12		
OU-235+D	U-235+D	1.000E+00	4.426E-05	4.422E-05	4.416E-05	4.393E-05	4.327E-05	4.104E-05	3.528E-05	2.078E-05		
U-235+D	Pa-231	1.000E+00	1.317E-10	3.948E-10	9.199E-10	2.745E-09	7.854E-09	2.453E-08	6.294E-08	1.225E-07		

U-235+D	Ac-227+D	1.000E+00	1.980E-11	1.254E-10	6.385E-10	5.255E-09	3.584E-08	2.150E-07	6.991E-07	1.468E-06
U-235	ΣDSR(j)		4.426E-05	4.423E-05	4.416E-05	4.393E-05	4.331E-05	4.128E-05	3.604E-05	2.237E-05
0U-238	U-238	5.450E-07	3.132E-14	3.129E-14	3.125E-14	3.109E-14	3.065E-14	2.910E-14	2.504E-14	1.475E-14
0U-238+D	U-238+D	1.000E+00	1.761E-05	1.759E-05	1.757E-05	1.748E-05	1.721E-05	1.633E-05	1.403E-05	8.267E-06
U-238+D	U-234	1.000E+00	7.756E-14	2.326E-13	5.419E-13	1.618E-12	4.632E-12	1.449E-11	3.728E-11	7.304E-11
U-238+D	Th-230	1.000E+00	2.935E-18	1.877E-17	9.761E-17	8.662E-16	7.225E-15	7.573E-14	6.129E-13	4.841E-12
U-238+D	Ra-226+D	1.000E+00	7.163E-19	9.269E-18	1.035E-16	2.695E-15	6.494E-14	2.223E-12	5.250E-11	1.267E-09
U-238+D	Pb-210+D	1.000E+00	1.909E-24	5.290E-23	1.213E-21	8.776E-20	5.480E-18	4.458E-16	1.694E-14	5.080E-13
U-238+D	Po-210	1.000E+00	5.291E-26	1.926E-24	6.427E-23	6.422E-21	4.685E-19	4.283E-17	1.783E-15	5.724E-14
U-238	ΣDSR(j)		1.761E-05	1.759E-05	1.757E-05	1.748E-05	1.721E-05	1.633E-05	1.403E-05	8.268E-06
0U-238+D	U-238+D	1.339E-06	2.358E-11	2.356E-11	2.352E-11	2.340E-11	2.305E-11	2.186E-11	1.879E-11	1.107E-11
U-238+D	U-234	1.339E-06	1.039E-19	3.114E-19	7.256E-19	2.166E-18	6.202E-18	1.941E-17	4.991E-17	9.780E-17
U-238+D	Th-230	1.339E-06	3.930E-24	2.514E-23	1.307E-22	1.160E-21	9.675E-21	1.014E-19	8.206E-19	6.482E-18
U-238+D	Ra-226+D	1.339E-06	9.650E-25	1.241E-23	1.385E-22	3.608E-21	8.695E-20	2.977E-18	7.030E-17	1.697E-15
U-238+D	Pb-210+D1	1.339E-06	2.021E-29	3.643E-28	7.990E-27	5.770E-25	3.592E-23	2.898E-21	1.090E-19	3.242E-18
U-238	ΣDSR(j)		2.358E-11	2.356E-11	2.352E-11	2.340E-11	2.305E-11	2.186E-11	1.879E-11	1.107E-11

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	4.549E+08	4.551E+08	4.555E+08	4.554E+08	4.447E+08	3.323E+08	1.070E+08	1.726E+07
U-235	5.649E+05	5.653E+05	5.661E+05	5.690E+05	5.772E+05	6.057E+05	6.937E+05	1.118E+06
U-238	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05	*3.361E+05

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.485E+01	1001	1.449E-06	1.725E+07	5.496E-08	4.549E+08
U-235	9.550E-01	0	4.426E-05	5.649E+05	4.426E-05	5.649E+05
U-238	1.308E+01	0	1.761E-05	*3.361E+05	1.761E-05	*3.361E+05

*At specific activity limit

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 51

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated											
ONuclide	Parent	THF(i)	t=	DOSE(j,t), mrem/yr							
(j)	(i)		0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
U-234	U-234	1.000E+00	8.160E-07	8.155E-07	8.143E-07	8.103E-07	7.987E-07	7.585E-07	6.522E-07	3.834E-07	
U-234	U-234	1.339E-06	1.093E-12	1.092E-12	1.090E-12	1.085E-12	1.069E-12	1.016E-12	8.733E-13	5.134E-13	
U-234	U-238	1.000E+00	1.015E-12	3.042E-12	7.088E-12	2.116E-11	6.058E-11	1.896E-10	4.876E-10	9.553E-10	
U-234	ΣDOSE(j):		8.160E-07	8.155E-07	8.143E-07	8.103E-07	7.987E-07	7.586E-07	6.527E-07	3.844E-07	
Th-230	U-234	1.000E+00	4.146E-11	1.243E-10	2.899E-10	8.675E-10	2.501E-09	8.027E-09	2.229E-08	5.811E-08	
Th-230	U-238	1.000E+00	3.839E-17	2.456E-16	1.277E-15	1.133E-14	9.451E-14	9.906E-13	8.016E-12	6.332E-11	
Th-230	ΣDOSE(j):		4.146E-11	1.243E-10	2.899E-10	8.675E-10	2.501E-09	8.028E-09	2.230E-08	5.818E-08	
ORa-226	U-234	1.000E+00	1.369E-11	8.757E-11	4.552E-10	4.038E-09	3.363E-08	3.506E-07	2.795E-06	2.105E-05	
Ra-226	U-238	1.000E+00	9.369E-18	1.212E-16	1.353E-15	3.524E-14	8.494E-13	2.908E-11	6.868E-10	1.658E-08	
Ra-226	ΣDOSE(j):		1.369E-11	8.757E-11	4.552E-10	4.038E-09	3.363E-08	3.506E-07	2.796E-06	2.107E-05	
OPb-210	U-234	1.000E+00	4.914E-17	6.312E-16	6.953E-15	1.723E-13	3.624E-12	8.377E-11	9.858E-10	8.707E-09	
Pb-210	U-238	1.000E+00	2.497E-23	6.920E-22	1.587E-20	1.148E-18	7.168E-17	5.831E-15	2.215E-13	6.645E-12	
Pb-210	ΣDOSE(j):		4.914E-17	6.312E-16	6.953E-15	1.723E-13	3.624E-12	8.377E-11	9.860E-10	8.714E-09	
OPo-210	U-234	1.000E+00	1.250E-18	2.563E-17	4.042E-16	1.320E-14	3.155E-13	8.116E-12	1.049E-10	9.949E-10	
Po-210	U-238	1.000E+00	6.921E-25	2.520E-23	8.407E-22	8.400E-20	6.128E-18	5.602E-16	2.333E-14	7.486E-13	
Po-210	ΣDOSE(j):		1.250E-18	2.563E-17	4.042E-16	1.320E-14	3.155E-13	8.116E-12	1.049E-10	9.957E-10	
Th-230	U-234	1.339E-06	5.552E-17	1.665E-16	3.882E-16	1.162E-15	3.349E-15	1.075E-14	2.985E-14	7.781E-14	
Th-230	U-238	1.339E-06	5.140E-23	3.288E-22	1.709E-21	1.517E-20	1.265E-19	1.326E-18	1.073E-17	8.478E-17	
Th-230	ΣDOSE(j):		5.552E-17	1.665E-16	3.882E-16	1.162E-15	3.349E-15	1.075E-14	2.986E-14	7.790E-14	
ORa-226	U-234	1.339E-06	1.833E-17	1.173E-16	6.096E-16	5.407E-15	4.503E-14	4.694E-13	3.743E-12	2.819E-11	
Ra-226	U-238	1.339E-06	1.262E-23	1.624E-22	1.812E-21	4.719E-20	1.137E-18	3.894E-17	9.196E-16	2.220E-14	
Ra-226	ΣDOSE(j):		1.833E-17	1.173E-16	6.096E-16	5.407E-15	4.503E-14	4.695E-13	3.744E-12	2.821E-11	
OPb-210	U-234	1.339E-06	3.237E-22	4.157E-21	4.577E-20	1.133E-18	2.375E-17	5.445E-16	6.339E-15	5.545E-14	
Pb-210	U-238	1.339E-06	2.643E-28	4.765E-27	1.045E-25	7.548E-24	4.698E-22	3.791E-20	1.426E-18	4.240E-17	
Pb-210	ΣDOSE(j):		3.237E-22	4.157E-21	4.577E-20	1.133E-18	2.375E-17	5.445E-16	6.340E-15	5.550E-14	
OU-235	U-235	1.000E+00	4.227E-05	4.223E-05	4.217E-05	4.195E-05	4.132E-05	3.919E-05	3.369E-05	1.984E-05	
OPa-231	U-235	1.000E+00	1.258E-10	3.771E-10	8.785E-10	2.622E-09	7.501E-09	2.343E-08	6.011E-08	1.170E-07	
OAc-227	U-235	1.000E+00	1.891E-11	1.198E-10	6.097E-10	5.019E-09	3.423E-08	2.053E-07	6.676E-07	1.402E-06	
OU-238	U-238	5.450E-07	4.096E-13	4.093E-13	4.087E-13	4.067E-13	4.009E-13	3.807E-13	3.275E-13	1.929E-13	
U-238	U-238	1.000E+00	2.303E-04	2.301E-04	2.298E-04	2.286E-04	2.251E-04	2.135E-04	1.836E-04	1.081E-04	
U-238	ΣDOSE(j):		2.303E-04	2.301E-04	2.298E-04	2.286E-04	2.251E-04	2.135E-04	1.836E-04	1.081E-04	
OU-238	U-238	1.339E-06	3.084E-10	3.082E-10	3.077E-10	3.061E-10	3.015E-10	2.859E-10	2.458E-10	1.448E-10	
1RESRAD-OFFSITE, Version 4.0			T½ Limit = 30 days 03/28/2023 12:58 Page 52								
Parent Dose Report											
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1											
File : SHIPROCK ALT1 OFFSITE RESD.ROF											

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated											
ONuclide	Parent	THF(i)	t=	DOSE(j,t), mrem/yr							
(j)	(i)		0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
U-234	U-238	1.339E-06	1.358E-18	4.073E-18	9.490E-18	2.833E-17	8.112E-17	2.539E-16	6.529E-16	1.279E-15	

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 53
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Individual Nuclide Soil Concentration										
Parent Nuclide and Thread Fraction Indicated										
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
U-234	U-234	1.000E+00		1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.376E+01	1.183E+01
U-234	U-234	1.339E-06		1.988E-05	1.987E-05	1.984E-05	1.973E-05	1.944E-05	1.843E-05	1.584E-05
U-234	U-238	1.000E+00		0.000E+00	3.690E-05	1.105E-04	3.665E-04	1.083E-03	3.424E-03	8.827E-03
U-234	ΣS(j):			1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.377E+01	1.184E+01
0Th-230	U-234	1.000E+00		0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.658E-02
Th-230	U-238	1.000E+00		0.000E+00	1.715E-10	1.531E-09	1.690E-08	1.505E-07	1.614E-06	1.314E-05
Th-230	ΣS(j):			0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.659E-02
0Ra-226	U-234	1.000E+00		0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03
Ra-226	U-238	1.000E+00		0.000E+00	2.540E-14	6.675E-13	2.441E-11	6.499E-10	2.304E-08	5.496E-07
Ra-226	ΣS(j):			0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03
0Pb-210	U-234	1.000E+00		0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.822E-03
Pb-210	U-238	1.000E+00		0.000E+00	2.104E-16	1.566E-14	1.797E-12	1.278E-10	1.078E-08	4.094E-07
Pb-210	ΣS(j):			0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.823E-03
0Po-210	U-234	1.000E+00		0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03
Po-210	U-238	1.000E+00		0.000E+00	6.291E-17	8.792E-15	1.464E-12	1.191E-10	1.055E-08	4.063E-07
Po-210	ΣS(j):			0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03
0Th-230	U-234	1.339E-06		0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.422E-09	1.760E-08	4.898E-08
Th-230	U-238	1.339E-06		0.000E+00	2.296E-16	2.049E-15	2.263E-14	2.015E-13	2.161E-12	1.759E-11
Th-230	ΣS(j):			0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.423E-09	1.760E-08	4.900E-08
0Ra-226	U-234	1.339E-06		0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.000E-09
Ra-226	U-238	1.339E-06		0.000E+00	3.411E-20	8.938E-19	3.269E-17	8.702E-16	3.085E-14	7.359E-13
Ra-226	ΣS(j):			0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.001E-09
0Pb-210	U-234	1.339E-06		0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09
Pb-210	U-238	1.339E-06		0.000E+00	3.417E-22	2.096E-20	2.406E-18	1.711E-16	1.443E-14	5.482E-13
Pb-210	ΣS(j):			0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09
0U-235	U-235	1.000E+00		9.550E-01	9.543E-01	9.528E-01	9.478E-01	9.336E-01	8.855E-01	7.612E-01
0Pa-231	U-235	1.000E+00		0.000E+00	2.019E-05	6.048E-05	2.005E-04	5.924E-04	1.871E-03	4.816E-03
0Ac-227	U-235	1.000E+00		0.000E+00	3.211E-07	2.804E-06	2.870E-05	2.088E-04	1.280E-03	4.183E-03
0U-238	U-238	5.450E-07		7.129E-06	7.123E-06	7.112E-06	7.075E-06	6.969E-06	6.609E-06	5.682E-06
U-238	U-238	1.000E+00		1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01
U-238	ΣS(j):			1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01
0U-238	U-238	1.339E-06		1.751E-05	1.750E-05	1.747E-05	1.738E-05	1.712E-05	1.624E-05	1.396E-05

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 54
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
U-234	U-238	1.339E-06	0.000E+00	4.941E-11	1.480E-10	4.908E-10	1.450E-09	4.584E-09	1.182E-08	2.318E-08

THF(i) is the thread fraction of the parent nuclide.

RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 55

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Run Time Information

ResOCalc.EXE execution began at 12:58 on 03/28/2023

ResOCalc.EXE execution ended at 12:58 on 03/28/2023

ResOCalc.EXE execution time 22.303 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years	2
Time = 1.000E+00 years	3
Time = 3.000E+00 years	4
Time = 1.000E+01 years	5
Time = 3.000E+01 years	6
Time = 1.000E+02 years	7
Time = 3.000E+02 years	8
Time = 1.000E+03 years	9

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-11	1.2E-13	0.0E+00	4.0E-16	2.6E-17	2.1E-18	3.1E-19	1.9E-11
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-10	1.3E-11	0.0E+00	3.8E-14	1.6E-14	7.6E-17	2.5E-17	1.3E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.5E-17	3.1E-18	0.0E+00	5.1E-19	3.8E-20	4.2E-20	4.7E-22	4.9E-17
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-19	6.9E-19	0.0E+00	2.6E-19	8.1E-20	2.4E-20	2.7E-22	1.2E-18
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-11	6.0E-16	0.0E+00	2.5E-17	2.0E-18	6.5E-18	1.9E-20	1.4E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-12	4.0E-11	0.0E+00	1.1E-13	1.3E-15	2.3E-16	7.5E-17	4.1E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	8.0E-07	0.0E+00	5.7E-09	1.8E-10	9.2E-10	2.5E-12	8.2E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-05	4.6E-08	0.0E+00	3.5E-10	1.1E-11	5.6E-11	1.5E-13	4.2E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	6.0E-07	0.0E+00	4.9E-09	1.5E-10	7.9E-10	2.2E-12	2.3E-04
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	1.4E-06	0.0E+00	1.1E-08	3.5E-10	1.8E-09	4.8E-12	2.7E-04

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-10	7.5E-13	0.0E+00	2.5E-15	8.7E-17	1.4E-17	3.7E-18	1.2E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-10	4.0E-11	0.0E+00	1.2E-13	5.2E-14	1.9E-16	1.6E-16	3.8E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-16	4.0E-17	0.0E+00	6.7E-18	5.2E-19	5.4E-19	1.0E-20	6.3E-16
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-18	1.4E-17	0.0E+00	5.3E-18	2.1E-18	4.9E-19	8.7E-21	2.6E-17
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-11	3.8E-15	0.0E+00	1.7E-16	1.5E-17	4.3E-17	2.3E-19	8.8E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-12	1.2E-10	0.0E+00	3.4E-13	3.5E-15	5.6E-16	4.8E-16	1.2E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	7.9E-07	0.0E+00	5.7E-09	1.8E-10	9.3E-10	7.5E-12	8.2E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-05	4.6E-08	0.0E+00	3.5E-10	1.1E-11	5.7E-11	4.6E-13	4.2E-05

U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	6.0E-07	0.0E+00	4.9E-09	1.6E-10	7.9E-10	6.4E-12	2.3E-04
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	1.4E-06	0.0E+00	1.1E-08	3.5E-10	1.8E-09	1.4E-11	2.7E-04

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 4
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 3 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-10	3.8E-12	0.0E+00	1.3E-14	2.3E-16	7.1E-17	3.9E-17	6.1E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-10	9.2E-11	0.0E+00	2.8E-13	1.3E-13	4.0E-16	8.0E-16	8.8E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-15	4.4E-16	0.0E+00	7.7E-17	5.9E-18	6.1E-18	2.3E-19	7.0E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-17	2.1E-16	0.0E+00	8.3E-17	3.6E-17	7.7E-18	2.6E-19	4.0E-16
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-10	2.0E-14	0.0E+00	1.0E-15	8.6E-17	2.3E-16	2.5E-18	4.6E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-11	2.8E-10	0.0E+00	7.9E-13	7.9E-15	1.2E-15	2.5E-15	2.9E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	7.9E-07	0.0E+00	5.8E-09	1.9E-10	9.4E-10	1.7E-11	8.1E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-05	4.6E-08	0.0E+00	3.5E-10	1.1E-11	5.7E-11	1.1E-12	4.2E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	6.0E-07	0.0E+00	4.9E-09	1.6E-10	8.0E-10	1.5E-11	2.3E-04
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	1.4E-06	0.0E+00	1.1E-08	3.6E-10	1.8E-09	3.3E-11	2.7E-04

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 5
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 10 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-09	3.1E-11	0.0E+00	1.1E-13	9.1E-16	6.0E-16	8.8E-16	5.0E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-09	2.8E-10	0.0E+00	9.3E-13	4.4E-13	1.2E-15	6.8E-15	2.6E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-13	1.1E-14	0.0E+00	2.1E-15	1.7E-16	1.6E-16	1.6E-17	1.7E-13
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-15	6.9E-15	0.0E+00	2.7E-15	1.3E-15	2.6E-16	2.3E-17	1.3E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-09	1.8E-13	0.0E+00	1.3E-14	1.0E-15	2.4E-15	6.4E-17	4.0E-09
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-11	8.3E-10	0.0E+00	2.4E-12	2.5E-14	3.5E-15	2.2E-14	8.7E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	7.9E-07	0.0E+00	5.9E-09	2.0E-10	9.7E-10	4.9E-11	8.1E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-05	4.6E-08	0.0E+00	3.6E-10	1.2E-11	5.9E-11	3.0E-12	4.2E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	5.9E-07	0.0E+00	5.0E-09	1.7E-10	8.3E-10	4.2E-11	2.3E-04
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	1.4E-06	0.0E+00	1.1E-08	3.9E-10	1.9E-09	9.4E-11	2.7E-04

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 6
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 30 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-08	2.1E-10	0.0E+00	8.0E-13	4.3E-15	4.4E-15	1.4E-14	3.4E-08

Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-09	7.9E-10	0.0E+00	3.3E-12	1.6E-12	3.9E-15	4.9E-14	7.5E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-12	2.3E-13	0.0E+00	5.7E-14	4.5E-15	3.9E-15	9.1E-16	3.6E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-14	1.6E-13	0.0E+00	6.6E-14	3.5E-14	6.5E-15	1.5E-15	3.2E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-08	1.5E-12	0.0E+00	1.8E-13	1.5E-14	2.8E-14	1.4E-15	3.4E-08
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-10	2.4E-09	0.0E+00	7.2E-12	8.4E-14	1.1E-14	1.7E-13	2.5E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-08	7.8E-07	0.0E+00	6.2E-09	2.3E-10	1.0E-09	1.2E-10	8.0E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-05	4.5E-08	0.0E+00	6.2E-10	1.4E-11	6.4E-11	7.5E-12	4.1E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-04	5.9E-07	0.0E+00	5.3E-09	2.0E-10	8.9E-10	1.0E-10	2.3E-04

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 2.7E-04 1.4E-06 0.0E+00 1.2E-08 4.5E-10 2.0E-09 2.4E-10 2.7E-04

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 7

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 100 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-07	1.3E-09	0.0E+00	5.2E-12	2.4E-14	3.0E-14	1.6E-13	2.1E-07
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-08	2.5E-09	0.0E+00	1.4E-11	7.2E-12	1.5E-14	3.3E-13	2.3E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-11	5.2E-12	0.0E+00	2.0E-12	1.7E-13	1.2E-13	5.5E-14	8.4E-11
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-12	3.8E-12	0.0E+00	1.8E-12	1.2E-12	1.9E-13	9.0E-14	8.1E-12
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-07	1.5E-11	0.0E+00	4.0E-12	3.1E-13	5.0E-13	3.9E-14	3.5E-07
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-10	7.6E-09	0.0E+00	2.5E-11	3.9E-13	4.4E-14	1.6E-12	8.0E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-08	7.4E-07	0.0E+00	6.6E-09	2.8E-10	1.2E-09	2.5E-10	7.6E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-05	4.3E-08	0.0E+00	4.1E-10	1.7E-11	7.1E-11	1.5E-11	3.9E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	5.6E-07	0.0E+00	5.7E-09	2.4E-10	9.9E-10	2.2E-10	2.1E-04

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 2.5E-04 1.3E-06 0.0E+00 1.3E-08 5.5E-10 2.2E-09 4.9E-10 2.5E-04

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 8

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 300 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-07	4.2E-09	0.0E+00	1.7E-11	7.7E-14	1.0E-13	6.3E-13	6.7E-07
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-08	6.3E-09	0.0E+00	4.2E-11	2.2E-11	4.2E-14	1.1E-12	6.0E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.9E-10	6.0E-11	0.0E+00	3.5E-11	2.9E-12	1.9E-12	1.2E-12	9.9E-10
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-11	4.4E-11	0.0E+00	2.4E-11	1.9E-11	2.7E-12	1.9E-12	1.0E-10
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-06	1.2E-10	0.0E+00	5.5E-11	4.2E-12	6.2E-12	5.8E-13	2.8E-06
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.8E-10	2.1E-08	0.0E+00	8.5E-11	1.8E-12	1.8E-13	1.1E-11	2.2E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-08	6.3E-07	0.0E+00	6.1E-09	2.7E-10	1.1E-09	2.8E-10	6.5E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-05	3.7E-08	0.0E+00	3.7E-10	1.7E-11	6.5E-11	1.7E-11	3.4E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-04	4.8E-07	0.0E+00	5.2E-09	2.3E-10	9.1E-10	2.4E-10	1.8E-04

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 2.2E-04 1.2E-06 0.0E+00 1.2E-08 5.7E-10 2.1E-09 5.6E-10 2.2E-04

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 9

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

[illegible]

0*Sum of dose from all releases and from primary contamination.

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Time = 3.000E+00	8
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Time = 3.000E+01	12
Time = 1.000E+02	14
Time = 3.000E+02	16
Time = 1.000E+03	18

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)

DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)
DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

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T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
	DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
	DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
	DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
	DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
	DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
	DCSF	Soil ingestion, slope factors, 1/(pCi):			
	DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
	DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
	DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
	DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
	DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)

DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.48E-17	0	3.90E-20	0	1.63E-22	0	1.07E-23	0	8.74E-25	0	1.26E-25	0	1.48E-17	0
Pa-231	8.91E-17	0	1.19E-18	0	4.82E-21	0	2.08E-21	0	9.64E-24	0	3.15E-24	0	9.02E-17	0
Pb-210	2.30E-23	0	2.36E-24	0	2.35E-25	0	1.74E-26	0	1.94E-26	0	2.15E-28	0	2.56E-23	0

Po-210	1.61E-25	0	6.30E-25	0	1.29E-25	0	4.09E-26	0	1.21E-26	0	1.37E-28	0	9.73E-25	0
Ra-226	1.10E-17	0	4.79E-22	0	1.25E-23	0	9.99E-25	0	3.24E-24	0	9.26E-27	0	1.10E-17	0
Th-230	1.39E-18	0	3.58E-18	0	1.70E-20	0	1.91E-22	0	3.43E-23	0	1.13E-23	0	4.99E-18	0
U-234	1.01E-14	0	6.36E-13	0	2.96E-15	0	9.45E-17	0	4.80E-16	0	1.31E-18	0	6.50E-13	0
U-235	3.32E-11	16	3.68E-14	0	1.95E-16	0	6.21E-18	0	3.16E-17	0	8.63E-20	0	3.33E-11	16
U-238	1.67E-10	83	4.77E-13	0	3.30E-15	0	1.05E-16	0	5.34E-16	0	1.46E-18	0	1.68E-10	83
<hr/>														
Total	2.01E-10	99	1.15E-12	1	6.46E-15	0	2.06E-16	0	1.05E-15	0	2.86E-18	0	2.02E-10	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 5

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water														
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.01E-14	0	6.36E-13	0	0.00E+00	0	2.96E-15	0	9.45E-17	0	4.80E-16	0	1.31E-18	0	6.50E-13	0

U-235	3.32E-11	16	3.68E-14	0	0.00E+00	0	1.95E-16	0	6.21E-18	0	3.16E-17	0	8.63E-20	0	3.33E-11	16
U-238	1.67E-10	83	4.77E-13	0	0.00E+00	0	3.30E-15	0	1.05E-16	0	5.34E-16	0	1.46E-18	0	1.68E-10	83
Total	2.01E-10	99	1.15E-12	1	0.00E+00	0	6.46E-15	0	2.06E-16	0	1.05E-15	0	2.86E-18	0	2.02E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	9.36E-17	0	2.47E-19	0	1.04E-21	0	3.53E-23	0	5.58E-24	0	1.52E-24	0	9.39E-17	0
Pa-231	2.67E-16	0	3.55E-18	0	1.47E-20	0	6.64E-21	0	2.38E-23	0	2.00E-23	0	2.71E-16	0
Pb-210	2.95E-22	0	3.03E-23	0	3.11E-24	0	2.38E-25	0	2.50E-25	0	4.81E-27	0	3.29E-22	0
Po-210	3.21E-24	0	1.26E-23	0	2.66E-24	0	1.05E-24	0	2.45E-25	0	4.36E-27	0	1.98E-23	0
Ra-226	7.03E-17	0	3.06E-21	0	8.50E-23	0	7.21E-24	0	2.13E-23	0	1.14E-25	0	7.03E-17	0
Th-230	4.18E-18	0	1.07E-17	0	5.11E-20	0	5.26E-22	0	8.43E-23	0	7.19E-23	0	1.50E-17	0
U-234	1.01E-14	0	6.36E-13	0	2.98E-15	0	9.55E-17	0	4.83E-16	0	3.91E-18	0	6.49E-13	0
U-235	3.32E-11	16	3.68E-14	0	1.96E-16	0	6.28E-18	0	3.18E-17	0	2.57E-19	0	3.32E-11	16
U-238	1.67E-10	83	4.76E-13	0	3.31E-15	0	1.06E-16	0	5.37E-16	0	4.35E-18	0	1.68E-10	83
Total	2.00E-10	99	1.15E-12	1	6.48E-15	0	2.08E-16	0	1.05E-15	0	8.52E-18	0	2.02E-10	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 7

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.01E-14	0	6.36E-13	0	0.00E+00	0	2.98E-15	0	9.55E-17	0	4.83E-16	0	3.91E-18	0	6.49E-13	0
U-235	3.32E-11	16	3.68E-14	0	0.00E+00	0	1.96E-16	0	6.29E-18	0	3.18E-17	0	2.57E-19	0	3.32E-11	16
U-238	1.67E-10	83	4.76E-13	0	0.00E+00	0	3.31E-15	0	1.06E-16	0	5.37E-16	0	4.35E-18	0	1.68E-10	83
Total	2.00E-10	99	1.15E-12	1	0.00E+00	0	6.48E-15	0	2.08E-16	0	1.05E-15	0	8.52E-18	0	2.02E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	4.77E-16	0	1.26E-18	0	5.31E-21	0	9.28E-23	0	2.88E-23	0	1.60E-23	0	4.78E-16	0
Pa-231	6.22E-16	0	8.28E-18	0	3.54E-20	0	1.64E-20	0	5.08E-23	0	1.03E-22	0	6.30E-16	0
Pb-210	3.25E-21	0	3.34E-22	0	3.55E-23	0	2.73E-24	0	2.79E-24	0	1.06E-25	0	3.63E-21	0
Po-210	5.01E-23	0	1.97E-22	0	4.19E-23	0	1.79E-23	0	3.88E-24	0	1.32E-25	0	3.11E-22	0
Ra-226	3.66E-16	0	1.59E-20	0	5.00E-22	0	4.29E-23	0	1.16E-22	0	1.25E-24	0	3.66E-16	0
Th-230	9.74E-18	0	2.50E-17	0	1.19E-19	0	1.19E-21	0	1.79E-22	0	3.72E-22	0	3.49E-17	0
U-234	1.00E-14	0	6.35E-13	0	3.00E-15	0	9.77E-17	0	4.89E-16	0	9.00E-18	0	6.48E-13	0
U-235	3.31E-11	16	3.67E-14	0	1.97E-16	0	6.42E-18	0	3.21E-17	0	5.91E-19	0	3.32E-11	16
U-238	1.67E-10	83	4.76E-13	0	3.34E-15	0	1.09E-16	0	5.43E-16	0	1.00E-17	0	1.67E-10	83
Total	2.00E-10	99	1.15E-12	1	6.53E-15	0	2.13E-16	0	1.06E-15	0	1.96E-17	0	2.01E-10	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t = 3 years								
Radionuclides								
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.04E-14	0	6.35E-13	0	0.00E+00	0	3.00E-15	0	9.77E-17	0	4.89E-16	0	9.00E-18	0	6.49E-13	0
U-235	3.31E-11	16	3.67E-14	0	0.00E+00	0	1.97E-16	0	6.44E-18	0	3.21E-17	0	5.91E-19	0	3.32E-11	16
U-238	1.67E-10	83	4.76E-13	0	0.00E+00	0	3.34E-15	0	1.09E-16	0	5.43E-16	0	1.00E-17	0	1.67E-10	83
Total	2.00E-10	99	1.15E-12	1	0.00E+00	0	6.53E-15	0	2.13E-16	0	1.06E-15	0	1.96E-17	0	2.01E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 10

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years
From releases to ground water and to surface water

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.33E-14	0	6.31E-13	0	0.00E+00	0	3.08E-15	0	1.05E-16	0	5.06E-16	0	2.56E-17	0	6.48E-13	0
U-235	3.30E-11	16	3.65E-14	0	0.00E+00	0	2.02E-16	0	6.95E-18	0	3.33E-17	0	1.68E-18	0	3.30E-11	16
U-238	1.66E-10	83	4.73E-13	0	0.00E+00	0	3.42E-15	0	1.17E-16	0	5.63E-16	0	2.85E-17	0	1.67E-10	83
Total	1.99E-10	99	1.14E-12	1	0.00E+00	0	6.70E-15	0	2.28E-16	0	1.10E-15	0	5.57E-17	0	2.00E-10	100

*** Sum of risk from all releases and from primary contamination via all pathways.

File : SHIPROCK ALT1 OFFSITE RESD.ROF

[illegible]

Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
<hr/>														
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.68E-14	0	7.06E-17	0	3.25E-19	0	1.74E-21	0	1.81E-21	0	5.72E-21	0	2.68E-14	0
Pa-231	5.31E-15	0	7.07E-17	0	4.21E-19	0	2.06E-19	0	4.91E-22	0	6.29E-21	0	5.38E-15	0
Pb-210	1.68E-18	0	1.73E-19	0	2.64E-20	0	2.10E-21	0	1.80E-21	0	4.18E-22	0	1.89E-18	0
Po-210	3.72E-20	0	1.46E-19	0	3.33E-20	0	1.78E-20	0	3.27E-21	0	7.30E-22	0	2.38E-19	0
Ra-226	2.70E-14	0	1.18E-18	0	9.10E-20	0	7.23E-21	0	1.38E-20	0	7.10E-22	0	2.70E-14	0
Th-230	8.40E-17	0	2.16E-16	0	1.08E-18	0	1.26E-20	0	1.62E-21	0	2.61E-20	0	3.01E-16	0
U-234	9.84E-15	0	6.22E-13	0	3.24E-15	0	1.21E-16	0	5.45E-16	0	6.41E-17	0	6.36E-13	0
U-235	3.25E-11	16	3.60E-14	0	2.13E-16	0	7.95E-18	0	3.58E-17	0	4.21E-18	0	3.25E-11	16
U-238	1.64E-10	83	4.66E-13	0	3.60E-15	0	1.35E-16	0	6.06E-16	0	7.12E-17	0	1.64E-10	83
<hr/>														
Total	1.96E-10	99	1.12E-12	1	7.06E-15	0	2.64E-16	0	1.19E-15	0	1.40E-16	0	1.97E-10	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 30 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
<hr/>								
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

0

From releases to ground water and to surface water

0

Ground Fish Radon Plant Meat Milk Soil Water

Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	3.69E-14	0	6.22E-13	0	0.00E+00	0	3.24E-15	0	1.21E-16	0	5.45E-16	0	6.41E-17	0	6.63E-13	0
U-235	3.25E-11	16	3.61E-14	0	0.00E+00	0	2.14E-16	0	8.16E-18	0	3.58E-17	0	4.22E-18	0	3.25E-11	16
U-238	1.64E-10	83	4.66E-13	0	0.00E+00	0	3.60E-15	0	1.35E-16	0	6.06E-16	0	7.12E-17	0	1.64E-10	83
Total	1.96E-10	99	1.12E-12	1	0.00E+00	0	7.06E-15	0	2.64E-16	0	1.19E-15	0	1.40E-16	0	1.97E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 14

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

From releases to ground water and to surface water														
Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Radio-Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.60E-13	0	4.23E-16	0	2.11E-18	0	9.64E-21	0	1.21E-20	0	6.49E-20	0	1.61E-13	0
Pa-231	1.66E-14	0	2.21E-16	0	1.82E-18	0	9.16E-19	0	1.90E-21	0	4.26E-20	0	1.68E-14	0
Pb-210	3.85E-17	0	3.96E-18	0	9.43E-19	0	7.74E-20	0	5.65E-20	0	2.51E-20	0	4.36E-17	0
Po-210	8.83E-19	0	3.46E-18	0	8.88E-19	0	5.98E-19	0	9.48E-20	0	4.54E-20	0	5.97E-18	0
Ra-226	2.82E-13	0	1.23E-17	0	2.01E-18	0	1.54E-19	0	2.46E-19	0	1.95E-20	0	2.82E-13	0
Th-230	2.70E-16	0	6.93E-16	0	3.82E-18	0	5.85E-20	0	6.57E-21	0	2.45E-19	0	9.67E-16	0
U-234	9.34E-15	0	5.90E-13	0	3.46E-15	0	1.47E-16	0	6.02E-16	0	1.32E-16	0	6.03E-13	0
U-235	3.08E-11	16	3.41E-14	0	2.28E-16	0	9.67E-18	0	3.95E-17	0	8.67E-18	0	3.08E-11	16
U-238	1.55E-10	83	4.42E-13	0	3.85E-15	0	1.64E-16	0	6.69E-16	0	1.47E-16	0	1.56E-10	83
Total	1.86E-10	99	1.07E-12	1	7.55E-15	0	3.22E-16	0	1.31E-15	0	2.88E-16	0	1.87E-10	100

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 100 years
Radionuclides

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.91E-13	0	5.90E-13	0	0.00E+00	0	3.47E-15	0	1.48E-16	0	6.02E-16	0	1.32E-16	0
U-235	3.10E-11	17	3.47E-14	0	0.00E+00	0	2.32E-16	0	1.06E-17	0	3.96E-17	0	8.78E-18	0
U-238	1.55E-10	83	4.42E-13	0	0.00E+00	0	3.85E-15	0	1.64E-16	0	6.69E-16	0	1.47E-16	0
Total	1.86E-10	99	1.07E-12	1	0.00E+00	0	7.55E-15	0	3.22E-16	0	1.31E-15	0	2.88E-16	0

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water											
	Ground		Fish		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)									
	Ground		Inhalation		Plant		Meat		Milk	
	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	5.22E-13	0	1.38E-15	0	7.12E-18	0	3.13E-20	0	4.10E-20	0

U-234	2.25E-12	1	5.09E-13	0	0.00E+00	0	3.23E-15	0	1.55E-16	0	5.63E-16	0	1.51E-16	0	2.77E-12	2
U-235	2.70E-11	17	3.13E-14	0	0.00E+00	0	2.20E-16	0	1.21E-17	0	3.67E-17	0	1.01E-17	0	2.71E-11	17
U-238	1.33E-10	82	3.80E-13	0	0.00E+00	0	3.52E-15	0	1.58E-16	0	6.21E-16	0	1.64E-16	0	1.34E-10	82
Total	1.63E-10	99	9.20E-13	1	0.00E+00	0	6.97E-15	0	3.26E-16	0	1.22E-15	0	3.26E-16	0	1.64E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 18

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

0	From releases to ground water and to surface water													
0	Ground		Fish		Plant		Meat		Milk		Soil		Water	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0	Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t = 1000 years													
0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
0	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	1.10E-12	1	2.89E-15	0	1.49E-17	0	6.39E-20	0	8.60E-20	0	5.33E-19	0	1.10E-12	1
Pa-231	8.28E-14	0	1.10E-15	0	1.06E-17	0	5.38E-18	0	1.06E-20	0	2.81E-19	0	8.39E-14	0
Pb-210	3.91E-15	0	4.02E-16	0	1.82E-16	0	1.54E-17	0	9.61E-18	0	6.58E-18	0	4.52E-15	0
Po-210	9.06E-17	0	3.56E-16	0	1.16E-16	0	1.06E-16	0	1.42E-17	0	1.20E-17	0	6.95E-16	0
Ra-226	1.69E-11	15	7.36E-16	0	2.94E-16	0	2.20E-17	0	3.15E-17	0	3.20E-18	0	1.69E-11	15
Th-230	1.95E-15	0	5.00E-15	0	5.18E-17	0	1.68E-18	0	1.43E-19	0	1.31E-17	0	7.02E-15	0
U-234	4.73E-15	0	2.99E-13	0	1.87E-15	0	8.43E-17	0	3.30E-16	0	8.83E-17	0	3.06E-13	0
U-235	1.56E-11	14	1.73E-14	0	1.23E-16	0	5.54E-18	0	2.17E-17	0	5.81E-18	0	1.56E-11	14
U-238	7.85E-11	70	2.24E-13	0	2.08E-15	0	9.37E-17	0	3.67E-16	0	9.83E-17	0	7.88E-11	70

Total	1.12E-10	100	5.50E-13	0	4.74E-15	0	3.35E-16	0	7.74E-16	0	2.28E-16	0	1.13E-10	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 12:58 Page 19
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESD.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 1000 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.69E-11	15	3.04E-13	0	0.00E+00	0	2.51E-15	0	2.29E-16	0	3.85E-16	0	1.23E-16	0	1.72E-11	15
U-235	1.68E-11	15	2.13E-14	0	0.00E+00	0	1.48E-16	0	1.10E-17	0	2.18E-17	0	6.62E-18	0	1.68E-11	15
U-238	7.86E-11	70	2.25E-13	0	0.00E+00	0	2.09E-15	0	9.41E-17	0	3.68E-16	0	9.85E-17	0	7.88E-11	70
Total	1.12E-10	100	5.50E-13	0	0.00E+00	0	4.74E-15	0	3.35E-16	0	7.74E-16	0	2.28E-16	0	1.13E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Attachment D-14-11a. Offsite Receptor Location 2, Resident Tap Water Inputs, Chemical Risk, Alternative 1

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Variable	Resident Tapwater Default Value	Site-Specific Value
BW ₀₋₂ (mutagenic body weight) kg	15	15
BW ₂₋₆ (mutagenic body weight) kg	15	15
BW ₆₋₁₆ (mutagenic body weight) kg	80	80
BW ₁₆₋₂₆ (mutagenic body weight) kg	80	80
BW _{res-a} (body weight - adult) kg	80	80
BW _{res-c} (body weight - child) kg	15	15
DFW _{res-adj} (age-adjusted dermal factor) cm ² -event/kg	2610650	2610650
DFWM _{res-adj} (mutagenic age-adjusted dermal factor) cm ² -event/kg	8191633	8191633
ED _{res} (exposure duration - resident) year	26	26
ED ₀₋₂ (mutagenic exposure duration first phase) year	2	2
ED ₂₋₆ (mutagenic exposure duration second phase) year	4	4
ED ₆₋₁₆ (mutagenic exposure duration third phase) year	10	10
ED ₁₆₋₂₆ (mutagenic exposure duration fourth phase) year	10	10
ED _{res-a} (exposure duration - adult) year	20	20
ED _{res-c} (exposure duration - child) year	6	6
EF _{res} (exposure frequency) days/yr	350	350
EF ₀₋₂ (mutagenic exposure frequency first phase) days/yr	350	350
EF ₂₋₆ (mutagenic exposure frequency second phase) days/yr	350	350
EF ₆₋₁₆ (mutagenic exposure frequency third phase) days/yr	350	350
EF ₁₆₋₂₆ (mutagenic exposure frequency fourth phase) days/yr	350	350
EF _{res-a} (exposure frequency - adult) days/yr	350	350
EF _{res-c} (exposure frequency - child) days/yr	350	350
ET _{res} (exposure time) hours/day	24	24
ET _{event-res-adj} (age-adjusted exposure time) hours/event	0.67077	0.67077
ET _{event-res-madj} (mutagenic age-adjusted exposure time) hours/event	0.67077	0.67077
ET ₀₋₂ (mutagenic dermal exposure time first phase) hours/event	0.54	0.54
ET ₂₋₆ (mutagenic dermal exposure time second phase) hours/event	0.54	0.54
ET ₆₋₁₆ (mutagenic dermal exposure time third phase) hours/event	0.71	0.71
ET ₁₆₋₂₆ (mutagenic dermal exposure time fourth phase) hours/event	0.71	0.71
ET _{res-a} (dermal exposure time - adult) hours/event	0.71	0.71
ET _{res-c} (dermal exposure time - child) hours/event	0.54	0.54
ET ₀₋₂ (mutagenic inhalation exposure time first phase) hours/day	24	24
ET ₂₋₆ (mutagenic inhalation exposure time second phase) hours/day	24	24
ET ₆₋₁₆ (mutagenic inhalation exposure time third phase) hours/day	24	24
ET ₁₆₋₂₆ (mutagenic inhalation exposure time fourth phase) hours/day	24	24
ET _{res-a} (inhalation exposure time - adult) hours/day	24	24
ET _{res-c} (inhalation exposure time - child) hours/day	24	24

EV ₀₋₂ (mutagenic events) per day	1	1
EV ₂₋₆ (mutagenic events) per day	1	1
EV ₆₋₁₆ (mutagenic events) per day	1	1
EV ₁₆₋₂₆ (mutagenic events) per day	1	1
EV _{res-a} (events - adult) per day	1	1
EV _{res-c} (events - child) per day	1	1
IFW _{res-adj} (adjusted intake factor) L/kg	327.95	327.95
IFWM _{res-adj} (mutagenic adjusted intake factor) L/kg	1019.9	1019.9
IRW ₀₋₂ (mutagenic water intake rate) L/day	0.78	0.78
IRW ₂₋₆ (mutagenic water intake rate) L/day	0.78	0.78
IRW ₆₋₁₆ (mutagenic water intake rate) L/day	2.5	2.5
IRW ₁₆₋₂₆ (mutagenic water intake rate) L/day	2.5	2.5
IRW _{res-a} (water intake rate - adult) L/day	2.5	2.5
IRW _{res-c} (water intake rate - child) L/day	0.78	0.78
K (volatilization factor of Andelman) L/m ³	0.5	0.5
LT (lifetime) years	70	70
SA ₀₋₂ (mutagenic skin surface area) cm ²	6365	6365
SA ₂₋₆ (mutagenic skin surface area) cm ²	6365	6365
SA ₆₋₁₆ (mutagenic skin surface area) cm ²	19652	19652
SA ₁₆₋₂₆ (mutagenic skin surface area) cm ²	19652	19652
SA _{res-a} (skin surface area - adult) cm ²	19652	19652
SA _{res-c} (skin surface area - child) cm ²	6365	6365
I _{sc} (apparent thickness of stratum corneum) cm	0.001	0.001

Output generated 15MAY2023:21:14:46

Attachment D-14-11b. Resident Exposures to Groundwater Used as Tap Water at Offsite Receptor Location 2, Chemical Risk, Alternative 1

Chemical	CAS Number	Mutagen?	VOC?	RfD (mg/kg-day)	RfD Ref	RfC (mg/m ³)	RfC Ref	SF _o (mg/kg-day) ⁻¹	SF _o R ef	IUR (ug/m ³) ⁻¹	IUR Ref	ABS _{gi}	K _p (cm/hr)	FA	In EPD?	Carcinogenic Absorbed dose per event (ug/cm ² -event)	Noncancer-child Absorbed dose per event (ug/cm ² -event)	Noncancer-adult Absorbed dose per event (ug/cm ² -event)	Noncancer-adjusted Absorbed dose per event (ug/cm ² -event)
Nitrate (measured as nitrogen)	14797-55-8	No	No	1.60E+00	IC	-		-		-		1.00E+00	1.00E-03	1.00E+00	Yes	2.49E-02	2.00E-02	2.63E-02	2.49E-02
<i>*Total Risk/HI</i>																			

Key: IC = IRIS Current; IA = IRIS Archive; PC = PPRTV Current; PA = PPRTV Archive; O = OPP; AF = ATSDR Final; AD = ATSDR Draft; C = Cal EPA; XC = PPRTV Screening Level Current; XA = PPRTV Screening Level Archive; HC = HEAST Current; HA = HEAST Archive; D = OW; W = TEF applied; E = RPF applied; SU = Surrogate

Output generated 15MAY2023:21:14:46

Table continued

Tap Water Concentration (ug/L)	Child Ingestion Noncarcinogenic CDI (mg/kg-day)	Child Dermal Noncarcinogenic CDI (mg/kg-day)	Child Inhalation Noncarcinogenic CDI (mg/m ³)	Adult Ingestion Noncarcinogenic CDI (mg/kg-day)	Adult Dermal Noncarcinogenic CDI (mg/kg-day)	Adult Inhalation Noncarcinogenic CDI (mg/m ³)	Adjusted Ingestion Noncarcinogenic CDI (mg/kg-day)	Adjusted Dermal Noncarcinogenic CDI (mg/kg-day)	Adjusted Inhalation Noncarcinogenic CDI (mg/m ³)	Ingestion Carcinogenic CDI (mg/kg-day)	Dermal Carcinogenic CDI (mg/kg-day)	Inhalation Carcinogenic CDI (ug/m ³)
3.71E+04	1.85E+00	8.15E-03	1.78E+01	1.11E+00	6.20E-03	1.78E+01	1.28E+00	6.85E-03	1.78E+01	4.76E-01	2.54E-03	6.61E+03
-	-	-	-	-	-	-	-	-	-	-	-	-

Table continued

Child Ingestion HQ	Child Inhalation HQ	Child Dermal HQ	Child Total HI	Adult Ingestion HQ	Adult Inhalation HQ	Adult Dermal HQ	Adult Total HI	Adjusted Ingestion HQ	Adjusted Inhalation HQ	Adjusted Dermal HQ	Adjusted Total HI	Ingestion Risk	Inhalation Risk	Dermal Risk	Total Risk
1.16E+00	-	5.09E-03	1.16E+00	6.95E-01	-	3.88E-03	6.99E-01	8.01E-01	-	4.28E-03	8.06E-01	-	-	-	-
1.16E+00	-	5.09E-03	1.16E+00	6.95E-01	-	3.88E-03	6.99E-01	8.01E-01	-	4.28E-03	8.06E-01	-	-	-	-

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Dose Conversion Factor (and Related) Parameter Summary
 Current Library: DCFPAK3.02
 Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)

DCSF	Pa-234	(Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT (11)
DCSF	Pa-234m	(Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT (12)
DCSF	Pb-210	(Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT (13)
DCSF	Pb-211	(Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT (14)
DCSF	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT (15)
DCSF	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT (16)
DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:				
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/28/2023 13:10	Page 3	
	Parent Dose Report				
	Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1				
	File : SHIPROCK_ALT1_OFFSITE RESE.ROF				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D		6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D		2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1		2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210		1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D		3.528E-02	3.528E-02	DCF2 (6)

DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)
DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)

TF					
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF					
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF					
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF					
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF					
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				

TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				
TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 6
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)

TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210, fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210, crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)
TF				
TF	Ra-226+D, fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D, crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230, fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230, crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234, fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D, fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238, fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D, fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)

VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (8)
VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)

DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)

DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)
DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)

DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach(1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY(1)
LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-1.278E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-9.650E+01	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	-1.989E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	-1.669E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-1.333E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-1.020E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	-1.600E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	-1.280E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-1.972E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-9.720E+01	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	-3.280E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	-2.280E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-2.778E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-1.778E+02	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	-4.280E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	-3.280E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-1.806E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.445E+02	6.562E+01	---	DWELLXY(2)

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Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	-1.517E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	-1.030E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)

TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T (2)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+00	3.000E+00	---	T (3)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+01	6.000E+00	---	T (4)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+01	1.200E+01	---	T (5)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+02	3.000E+01	---	T (6)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+02	7.500E+01	---	T (7)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+03	1.750E+02	---	T (8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T (9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T (10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	7.340E-07	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
	PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
	PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
	PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
	PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
	PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
	PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
	PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
	PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
	PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
	PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
	PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV

PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)

AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF (3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG (3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF (3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN (3)
AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB (3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY (3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP (3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG (3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC (3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF (3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO (4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT (4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN (4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF (4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG (4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF (4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN (4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB (4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY (4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP (4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG (4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC (4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF (4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.758E+03	1.000E+03	---	AREADWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name

AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX
AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

Site Specific Parameter Summary (continued)					
0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,1)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ (4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ (4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ (5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ (5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ (6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ (1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ (1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ (1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ (1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ (1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ (2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ (2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ (2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ (2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ (2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ (3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ (3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ (3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,2)

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)

AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)

AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)

AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ (2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ (2,2,5)
AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ (2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ (2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ (2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ (3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ (3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ (3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ (3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ (4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ (4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ (5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ (5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ (6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,5)
AIRT	Joint Frequency in ESE Sector				

AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)
AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ (6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,6)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ (1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ (1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ (1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ (1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ (1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ (2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ (2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ (2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ (2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ (3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ (3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ (3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ (4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ (4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ (5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ (5,4,7)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	AIRT	Joint Frequency in SSE Sector				
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
	AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
	AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
	AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
	AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)

AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,8)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ (5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ (1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ (1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ (1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ (1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ (1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ (2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ (2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ (2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ (2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ (2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ (3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ (3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ (3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ (3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,9)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
AIRT	Joint Frequency in S Sector				

AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)

AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)

AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)
AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)
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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0	Menu	Parameter	User Input	Default	RESRAD computed
	AIRT	Joint Frequency in WSW Sector			
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---
	AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---
	AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---
	AIRT	Joint Frequency in WSW Sector			
	AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---
	AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---
	AIRT	Joint Frequency in WSW Sector			
	AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---
	AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---
	AIRT	Joint Frequency in W Sector			
	AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---
	AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---
	AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---
	AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---
	AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---
	AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---
	AIRT	Joint Frequency in W Sector			

AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)
AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)

AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)

AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)

AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,15)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				

AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-1.000E+00	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	0.000E+00	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
0 = (total porosity + distribution coefficient*dry bulk density) / total porosity					

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)

USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ (1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR(1)
WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACTCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)

LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI(1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI(1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI(2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI(2,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	7.340E-07	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	7.340E-07	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)

SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA (6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA (7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA (8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA (9)
SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA (10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA (11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA (12)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	4.217E+01	1.325E+01	---	RAD_SHAPE (13)
SEXT	Outer annular radius (m), ring 14:	8.433E+01	2.650E+01	---	RAD_SHAPE (14)
SEXT	Outer annular radius (m), ring 15:	1.265E+02	3.975E+01	---	RAD_SHAPE (15)
SEXT	Outer annular radius (m), ring 16:	1.687E+02	5.300E+01	---	RAD_SHAPE (16)
SEXT	Outer annular radius (m), ring 17:	2.108E+02	6.625E+01	---	RAD_SHAPE (17)
SEXT	Outer annular radius (m), ring 18:	2.530E+02	7.950E+01	---	RAD_SHAPE (18)
SEXT	Outer annular radius (m), ring 19:	2.952E+02	9.275E+01	---	RAD_SHAPE (19)
SEXT	Outer annular radius (m), ring 20:	3.373E+02	1.060E+02	---	RAD_SHAPE (20)
SEXT	Outer annular radius (m), ring 21:	3.795E+02	1.192E+02	---	RAD_SHAPE (21)
SEXT	Outer annular radius (m), ring 22:	4.217E+02	1.325E+02	---	RAD_SHAPE (22)
SEXT	Outer annular radius (m), ring 23:	4.638E+02	1.458E+02	---	RAD_SHAPE (23)
SEXT	Outer annular radius (m), ring 24:	5.060E+02	1.590E+02	---	RAD_SHAPE (24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA (13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA (14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA (15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA (16)
SEXT	Ring 17	3.700E-04	1.900E-01	---	FRACA (17)
SEXT	Ring 18	3.300E-02	2.400E-01	---	FRACA (18)
SEXT	Ring 19	7.200E-02	2.000E-01	---	FRACA (19)
SEXT	Ring 20	9.800E-02	1.700E-01	---	FRACA (20)
SEXT	Ring 21	1.200E-01	1.500E-01	---	FRACA (21)
SEXT	Ring 22	1.000E-01	1.300E-01	---	FRACA (22)
SEXT	Ring 23	4.900E-02	1.200E-01	---	FRACA (23)
SEXT	Ring 24	1.400E-02	5.200E-02	---	FRACA (24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	2.145E+02	2.145E+02	---	RAD_SHAPE (25)
SEXT	Outer annular radius (m), ring 26:	2.407E+02	2.407E+02	---	RAD_SHAPE (26)
SEXT	Outer annular radius (m), ring 27:	2.668E+02	2.668E+02	---	RAD_SHAPE (27)
SEXT	Outer annular radius (m), ring 28:	2.929E+02	2.929E+02	---	RAD_SHAPE (28)
SEXT	Outer annular radius (m), ring 29:	3.191E+02	3.191E+02	---	RAD_SHAPE (29)

SEXT	Outer annular radius (m), ring 30:	3.452E+02	3.452E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	3.713E+02	3.713E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	4.096E+02	4.096E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	4.345E+02	4.345E+02	---	RAD_SHAPE(33)
SEXT	Outer annular radius (m), ring 34:	4.595E+02	4.595E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	4.845E+02	4.845E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	5.095E+02	5.095E+02	---	RAD_SHAPE(36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.875E-02	1.875E-02	---	FRACA(26)
SEXT	Ring 27	4.875E-02	4.875E-02	---	FRACA(27)
SEXT	Ring 28	7.090E-02	7.090E-02	---	FRACA(28)
SEXT	Ring 29	8.824E-02	8.824E-02	---	FRACA(29)
SEXT	Ring 30	1.023E-01	1.023E-01	---	FRACA(30)
SEXT	Ring 31	1.140E-01	1.140E-01	---	FRACA(31)
SEXT	Ring 32	1.094E-01	1.094E-01	---	FRACA(32)
SEXT	Ring 33	8.178E-02	8.178E-02	---	FRACA(33)
SEXT	Ring 34	5.069E-02	5.069E-02	---	FRACA(34)
SEXT	Ring 35	2.738E-02	2.738E-02	---	FRACA(35)
SEXT	Ring 36	8.425E-03	8.425E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	1.860E+02	1.860E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	2.148E+02	2.148E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	2.436E+02	2.436E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	2.724E+02	2.724E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	3.012E+02	3.012E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	3.300E+02	3.300E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	3.588E+02	3.588E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	3.740E+02	3.740E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	4.014E+02	4.014E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	4.289E+02	4.289E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	4.563E+02	4.563E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	4.838E+02	4.838E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	2.185E-02	2.185E-02	---	FRACA(38)
SEXT	Ring 39	5.582E-02	5.582E-02	---	FRACA(39)
SEXT	Ring 40	8.027E-02	8.027E-02	---	FRACA(40)
SEXT	Ring 41	9.894E-02	9.894E-02	---	FRACA(41)
SEXT	Ring 42	1.138E-01	1.138E-01	---	FRACA(42)

SEXT	Ring 43	1.258E-01	1.258E-01	---	FRACA (43)
SEXT	Ring 44	1.254E-01	1.254E-01	---	FRACA (44)
SEXT	Ring 45	9.683E-02	9.683E-02	---	FRACA (45)
SEXT	Ring 46	5.922E-02	5.922E-02	---	FRACA (46)
SEXT	Ring 47	3.162E-02	3.162E-02	---	FRACA (47)
SEXT	Ring 48	9.634E-03	9.634E-03	---	FRACA (48)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	3.146E+02	3.146E+02	---	RAD_SHAPE (49)
SEXT	Outer annular radius (m), ring 50:	3.423E+02	3.423E+02	---	RAD_SHAPE (50)
SEXT	Outer annular radius (m), ring 51:	3.701E+02	3.701E+02	---	RAD_SHAPE (51)
SEXT	Outer annular radius (m), ring 52:	3.979E+02	3.979E+02	---	RAD_SHAPE (52)
SEXT	Outer annular radius (m), ring 53:	4.257E+02	4.257E+02	---	RAD_SHAPE (53)
SEXT	Outer annular radius (m), ring 54:	4.534E+02	4.534E+02	---	RAD_SHAPE (54)
SEXT	Outer annular radius (m), ring 55:	4.820E+02	4.820E+02	---	RAD_SHAPE (55)
SEXT	Outer annular radius (m), ring 56:	5.107E+02	5.107E+02	---	RAD_SHAPE (56)
SEXT	Outer annular radius (m), ring 57:	5.345E+02	5.345E+02	---	RAD_SHAPE (57)
SEXT	Outer annular radius (m), ring 58:	5.584E+02	5.584E+02	---	RAD_SHAPE (58)
SEXT	Outer annular radius (m), ring 59:	5.823E+02	5.823E+02	---	RAD_SHAPE (59)
SEXT	Outer annular radius (m), ring 60:	6.062E+02	6.062E+02	---	RAD_SHAPE (60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA (49)
SEXT	Ring 50	1.482E-02	1.482E-02	---	FRACA (50)
SEXT	Ring 51	3.946E-02	3.946E-02	---	FRACA (51)
SEXT	Ring 52	5.842E-02	5.842E-02	---	FRACA (52)
SEXT	Ring 53	7.378E-02	7.378E-02	---	FRACA (53)
SEXT	Ring 54	8.662E-02	8.662E-02	---	FRACA (54)
SEXT	Ring 55	8.800E-02	8.800E-02	---	FRACA (55)
SEXT	Ring 56	8.046E-02	8.046E-02	---	FRACA (56)
SEXT	Ring 57	6.364E-02	6.364E-02	---	FRACA (57)
SEXT	Ring 58	4.045E-02	4.045E-02	---	FRACA (58)
SEXT	Ring 59	2.220E-02	2.220E-02	---	FRACA (59)
SEXT	Ring 60	6.916E-03	6.916E-03	---	FRACA (60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	4.413E+02	4.413E+02	---	RAD_SHAPE (61)
SEXT	Outer annular radius (m), ring 62:	4.689E+02	4.689E+02	---	RAD_SHAPE (62)
SEXT	Outer annular radius (m), ring 63:	4.965E+02	4.965E+02	---	RAD_SHAPE (63)
SEXT	Outer annular radius (m), ring 64:	5.240E+02	5.240E+02	---	RAD_SHAPE (64)
SEXT	Outer annular radius (m), ring 65:	5.516E+02	5.516E+02	---	RAD_SHAPE (65)
SEXT	Outer annular radius (m), ring 66:	5.792E+02	5.792E+02	---	RAD_SHAPE (66)

SEXT	Outer annular radius (m), ring 67:	6.053E+02	6.053E+02	---	RAD_SHAPE (67)
SEXT	Outer annular radius (m), ring 68:	6.315E+02	6.315E+02	---	RAD_SHAPE (68)
SEXT	Outer annular radius (m), ring 69:	6.573E+02	6.573E+02	---	RAD_SHAPE (69)
SEXT	Outer annular radius (m), ring 70:	6.830E+02	6.830E+02	---	RAD_SHAPE (70)
SEXT	Outer annular radius (m), ring 71:	7.087E+02	7.087E+02	---	RAD_SHAPE (71)
SEXT	Outer annular radius (m), ring 72:	7.345E+02	7.345E+02	---	RAD_SHAPE (72)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 38

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.032E-02	1.032E-02	---	FRACA (62)
SEXT	Ring 63	2.845E-02	2.845E-02	---	FRACA (63)
SEXT	Ring 64	4.348E-02	4.348E-02	---	FRACA (64)
SEXT	Ring 65	5.629E-02	5.629E-02	---	FRACA (65)
SEXT	Ring 66	6.741E-02	6.741E-02	---	FRACA (66)
SEXT	Ring 67	7.001E-02	7.001E-02	---	FRACA (67)
SEXT	Ring 68	6.554E-02	6.554E-02	---	FRACA (68)
SEXT	Ring 69	5.314E-02	5.314E-02	---	FRACA (69)
SEXT	Ring 70	3.470E-02	3.470E-02	---	FRACA (70)
SEXT	Ring 71	1.934E-02	1.934E-02	---	FRACA (71)
SEXT	Ring 72	6.083E-03	6.083E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM
RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVS

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVS
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK(1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK(2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT(1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT(2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT(3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT(4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK(1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK(2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT(1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT(2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT(3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT(4)

Summary of Pathway Selections

Pathway	User Selection
---------	----------------

1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 40
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.648E-03	1.647E-03	1.645E-03	1.636E-03	1.612E-03	1.532E-03	1.335E-03	9.105E-04
M(t):	6.593E-05	6.588E-05	6.578E-05	6.544E-05	6.447E-05	6.127E-05	5.340E-05	3.642E-05

0Maximum TDOSE(t): 1.648E-03 mrem/yr at t = 0 years

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 0 years

From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	8.31E-08	0	2.21E-06	0	0.00E+00	0	1.81E-08	0	2.01E-10	0	1.12E-09	0	7.52E-12	0	2.31E-06	0
U-235	2.55E-04	15	1.28E-07	0	0.00E+00	0	1.11E-09	0	1.23E-11	0	6.86E-11	0	4.60E-13	0	2.56E-04	16
U-238	1.39E-03	84	1.66E-06	0	0.00E+00	0	1.55E-08	0	1.72E-10	0	9.59E-10	0	6.42E-12	0	1.39E-03	84
Total	1.64E-03	100	4.00E-06	0	0.00E+00	0	3.47E-08	0	3.85E-10	0	2.15E-09	0	1.44E-11	0	1.65E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water

0	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	8.35E-08	0	2.21E-06	0	0.00E+00	0	1.82E-08	0	2.03E-10	0	1.13E-09	0	2.24E-11	0	2.31E-06	0
U-235	2.55E-04	15	1.28E-07	0	0.00E+00	0	1.11E-09	0	1.25E-11	0	6.90E-11	0	1.37E-12	0	2.55E-04	16
U-238	1.39E-03	84	1.66E-06	0	0.00E+00	0	1.55E-08	0	1.73E-10	0	9.64E-10	0	1.91E-11	0	1.39E-03	84
Total	1.64E-03	100	3.99E-06	0	0.00E+00	0	3.48E-08	0	3.89E-10	0	2.16E-09	0	4.29E-11	0	1.65E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

From releases to ground water and to surface water

0	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
---	--------	------	-------	-------	------	------	------	-------

Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

Radio-Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways*
U-234	8.56E-08	2.20E-06	0.00E+00	1.83E-08	2.07E-10	1.14E-09	5.15E-11	2.31E-06
U-235	2.55E-04	1.28E-07	0.00E+00	1.12E-09	1.28E-11	6.98E-11	3.15E-12	2.55E-04
U-238	1.39E-03	1.66E-06	0.00E+00	1.56E-08	1.77E-10	9.75E-10	4.40E-11	1.39E-03
Total	1.64E-03	3.99E-06	0.00E+00	3.51E-08	3.97E-10	2.19E-09	9.87E-11	1.64E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Radio-Nuclide	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
U-234	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-235	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U-238	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Radio-Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways*
U-234	1.07E-07	2.19E-06	0.00E+00	1.88E-08	2.21E-10	1.18E-09	1.47E-10	2.32E-06
U-235	2.54E-04	1.28E-07	0.00E+00	1.15E-09	1.40E-11	7.21E-11	8.97E-12	2.54E-04
U-238	1.38E-03	1.65E-06	0.00E+00	1.60E-08	1.88E-10	1.01E-09	1.25E-10	1.38E-03

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E Atm. Transport Rem. Alt 1

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File : SHIPROCK ALT1 OFFSITE RESE.ROF
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

From releases to ground water and to surface water

[illegible]

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.85E-07	0	2.16E-06	0	0.00E+00	0	1.97E-08	0	2.51E-10	0	1.27E-09	0	3.67E-10	0	2.47E-06	0
U-235	2.50E-04	16	1.28E-07	0	0.00E+00	0	1.22E-09	0	1.71E-11	0	7.75E-11	0	2.26E-11	0	2.50E-04	16
U-238	1.36E-03	84	1.63E-06	0	0.00E+00	0	1.68E-08	0	2.14E-10	0	1.08E-09	0	3.13E-10	0	1.36E-03	84
Total	1.61E-03	100	3.92E-06	0	0.00E+00	0	3.78E-08	0	4.83E-10	0	2.43E-09	0	7.03E-10	0	1.61E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

$T_{1/2}$ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

in mrem/yr and as a Percentage of Total Dose at t = 100 years

From releases to ground water and to surface water

[illegible]

Total 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 100 years

0 Radio- Nuclide		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
		Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234		2.20E-06	0	2.07E-06	0	0.00E+00	0	2.10E-08	0	3.02E-10	0	1.39E-09	0	7.61E-10	0	4.29E-06	0
U-235		2.38E-04	16	1.29E-07	0	0.00E+00	0	1.34E-09	0	2.59E-11	0	8.52E-11	0	4.76E-11	0	2.38E-04	16
U-238		1.29E-03	84	1.54E-06	0	0.00E+00	0	1.79E-08	0	2.56E-10	0	1.19E-09	0	6.45E-10	0	1.29E-03	84
Total		1.53E-03	100	3.74E-06	0	0.00E+00	0	4.02E-08	0	5.84E-10	0	2.67E-09	0	1.45E-09	0	1.53E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

0		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)														All Pathways*	
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil			
Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	
U-234	1.70E-05	1	1.82E-06	0	0.00E+00	0	1.97E-08	0	3.16E-10	0	1.30E-09	0	8.91E-10	0	1.88E-05	1	
U-235	2.08E-04	16	1.31E-07	0	0.00E+00	0	1.35E-09	0	4.00E-11	0	7.90E-11	0	5.69E-11	0	2.08E-04	16	
U-238	1.11E-03	83	1.33E-06	0	0.00E+00	0	1.63E-08	0	2.46E-10	0	1.10E-09	0	7.23E-10	0	1.11E-03	83	
Total	1.33E-03	100	3.27E-06	0	0.00E+00	0	3.73E-08	0	6.02E-10	0	2.48E-09	0	1.67E-09	0	1.34E-03	100	

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) in mrem/yr and as a Percentage of Total Dose at t = 1000 years																	
Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																	
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*		
0	Radio- Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
	U-234	1.27E-04	14	1.19E-06	0	0.00E+00	0	1.60E-08	0	4.75E-10	0	8.96E-10	0	8.98E-10	0	1.29E-04	14
	U-235	1.29E-04	14	1.18E-07	0	0.00E+00	0	1.06E-09	0	5.44E-11	0	4.70E-11	0	4.14E-11	0	1.29E-04	14
	U-238	6.52E-04	72	7.83E-07	0	0.00E+00	0	9.65E-09	0	1.46E-10	0	6.54E-10	0	4.34E-10	0	6.53E-04	72
	Total	9.08E-04	100	2.09E-06	0	0.00E+00	0	2.67E-08	0	6.76E-10	0	1.60E-09	0	1.37E-09	0	9.11E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Dose/Source Ratios Summed Over All Pathways Parent and Progeny Principal Radionuclide Contributions Indicated											
Parent (i)	Product (j)	Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g)								
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
U-234	U-234	1.000E+00	1.555E-07	1.554E-07	1.552E-07	1.544E-07	1.522E-07	1.445E-07	1.242E-07	7.304E-08	
U-234	Th-230	1.000E+00	8.151E-12	2.445E-11	5.700E-11	1.706E-10	4.917E-10	1.578E-09	4.382E-09	1.143E-08	
U-234	Ra-226+D	1.000E+00	5.573E-12	3.565E-11	1.853E-10	1.644E-09	1.369E-08	1.427E-07	1.138E-06	8.570E-06	
U-234	Pb-210+D	1.000E+00	1.921E-17	2.467E-16	2.716E-15	6.725E-14	1.412E-12	3.246E-11	3.793E-10	3.329E-09	
U-234	Po-210	1.000E+00	2.734E-19	5.533E-18	8.681E-17	2.814E-15	6.627E-14	1.647E-12	2.048E-11	1.885E-10	
U-234	ΣDSR(j)		1.555E-07	1.554E-07	1.554E-07	1.562E-07	1.664E-07	2.888E-07	1.267E-06	8.658E-06	
U-234	U-234	1.339E-06	2.082E-13	2.081E-13	2.078E-13	2.067E-13	2.038E-13	1.935E-13	1.664E-13	9.780E-14	
U-234	Th-230	1.339E-06	1.091E-17	3.273E-17	7.632E-17	2.284E-16	6.584E-16	2.113E-15	5.868E-15	1.530E-14	
U-234	Ra-226+D	1.339E-06	7.463E-18	4.773E-17	2.481E-16	2.201E-15	1.833E-14	1.911E-13	1.524E-12	1.147E-11	
U-234	Pb-210+D1	1.339E-06	1.307E-22	1.679E-21	1.848E-20	4.573E-19	9.586E-18	2.195E-16	2.551E-15	2.229E-14	
U-234	ΣDSR(j)		2.082E-13	2.081E-13	2.081E-13	2.092E-13	2.228E-13	3.869E-13	1.698E-12	1.161E-11	
U-235+D	U-235+D	1.000E+00	2.676E-04	2.674E-04	2.670E-04	2.656E-04	2.616E-04	2.481E-04	2.133E-04	1.256E-04	
U-235+D	Pa-231	1.000E+00	7.510E-10	2.252E-09	5.246E-09	1.565E-08	4.478E-08	1.399E-07	3.588E-07	6.985E-07	

U-235+D	Ac-227+D	1.000E+00	1.193E-10	7.561E-10	3.848E-09	3.168E-08	2.161E-07	1.296E-06	4.214E-06	8.847E-06
U-235	ΣDSR(j)		2.676E-04	2.674E-04	2.670E-04	2.656E-04	2.618E-04	2.495E-04	2.178E-04	1.352E-04
0U-238	U-238	5.450E-07	1.070E-13	1.069E-13	1.067E-13	1.062E-13	1.047E-13	9.936E-14	8.546E-14	5.034E-14
0U-238+D	U-238+D	1.000E+00	1.063E-04	1.062E-04	1.061E-04	1.055E-04	1.039E-04	9.856E-05	8.473E-05	4.991E-05
U-238+D	U-234	1.000E+00	2.195E-13	6.580E-13	1.533E-12	4.577E-12	1.310E-11	4.101E-11	1.055E-10	2.066E-10
U-238+D	Th-230	1.000E+00	8.569E-18	5.481E-17	2.850E-16	2.529E-15	2.109E-14	2.211E-13	1.789E-12	1.413E-11
U-238+D	Ra-226+D	1.000E+00	4.330E-18	5.603E-17	6.254E-16	1.629E-14	3.925E-13	1.344E-11	3.174E-10	7.661E-09
U-238+D	Pb-210+D	1.000E+00	1.108E-23	3.070E-22	7.038E-21	5.088E-19	3.170E-17	2.565E-15	9.685E-14	2.888E-12
U-238+D	Po-210	1.000E+00	1.737E-25	6.193E-24	2.051E-22	2.034E-20	1.462E-18	1.293E-16	5.191E-15	1.619E-13
U-238	ΣDSR(j)		1.063E-04	1.062E-04	1.061E-04	1.055E-04	1.039E-04	9.856E-05	8.473E-05	4.991E-05
0U-238+D	U-238+D	1.339E-06	1.423E-10	1.422E-10	1.420E-10	1.413E-10	1.391E-10	1.320E-10	1.134E-10	6.682E-11
U-238+D	U-234	1.339E-06	2.939E-19	8.811E-19	2.053E-18	6.129E-18	1.755E-17	5.491E-17	1.412E-16	2.767E-16
U-238+D	Th-230	1.339E-06	1.147E-23	7.339E-23	3.816E-22	3.386E-21	2.825E-20	2.961E-19	2.396E-18	1.892E-17
U-238+D	Ra-226+D	1.339E-06	5.833E-24	7.504E-23	8.374E-22	2.181E-20	5.256E-19	1.799E-17	4.249E-16	1.026E-14
U-238+D	Pb-210+D1	1.339E-06	1.212E-28	2.185E-27	4.791E-26	3.460E-24	2.153E-22	1.735E-20	6.519E-19	1.936E-17
U-238	ΣDSR(j)		1.423E-10	1.422E-10	1.420E-10	1.413E-10	1.391E-10	1.320E-10	1.134E-10	6.684E-11

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.608E+08	1.608E+08	1.609E+08	1.600E+08	1.503E+08	8.656E+07	1.973E+07	2.888E+06
U-235	9.343E+04	9.350E+04	9.364E+04	9.412E+04	9.548E+04	1.002E+05	1.148E+05	1.850E+05
U-238	2.352E+05	2.354E+05	2.357E+05	2.370E+05	2.406E+05	2.537E+05	2.951E+05	*3.361E+05

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.485E+01	1001	8.664E-06	2.886E+06	1.555E-07	1.608E+08
U-235	9.550E-01	0	2.676E-04	9.343E+04	2.676E-04	9.343E+04
U-238	1.308E+01	0	1.063E-04	2.352E+05	1.063E-04	2.352E+05

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 51

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated									
ONuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr						
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02 3.000E+02 1.000E+03
U-234	U-234	1.000E+00		2.309E-06	2.308E-06	2.304E-06	2.293E-06	2.260E-06	2.146E-06 1.845E-06 1.085E-06
U-234	U-234	1.339E-06		3.092E-12	3.090E-12	3.085E-12	3.070E-12	3.026E-12	2.873E-12 2.470E-12 1.452E-12
U-234	U-238	1.000E+00		2.871E-12	8.607E-12	2.006E-11	5.987E-11	1.714E-10	5.364E-10 1.379E-09 2.703E-09
U-234	ΣDOSE(j):			2.309E-06	2.308E-06	2.304E-06	2.293E-06	2.260E-06	2.146E-06 1.846E-06 1.087E-06
0Th-230	U-234	1.000E+00		1.210E-10	3.630E-10	8.464E-10	2.533E-09	7.302E-09	2.344E-08 6.508E-08 1.697E-07
Th-230	U-238	1.000E+00		1.121E-16	7.169E-16	3.727E-15	3.308E-14	2.759E-13	2.892E-12 2.340E-11 1.849E-10
Th-230	ΣDOSE(j):			1.210E-10	3.630E-10	8.464E-10	2.533E-09	7.302E-09	2.344E-08 6.510E-08 1.699E-07
0Ra-226	U-234	1.000E+00		8.276E-11	5.293E-10	2.752E-09	2.441E-08	2.033E-07	2.119E-06 1.690E-05 1.273E-04
Ra-226	U-238	1.000E+00		5.663E-17	7.328E-16	8.181E-15	2.130E-13	5.134E-12	1.758E-10 4.151E-09 1.002E-07
Ra-226	ΣDOSE(j):			8.276E-11	5.294E-10	2.752E-09	2.441E-08	2.033E-07	2.119E-06 1.690E-05 1.274E-04
0Pb-210	U-234	1.000E+00		2.852E-16	3.663E-15	4.034E-14	9.986E-13	2.096E-11	4.820E-10 5.632E-09 4.944E-08
Pb-210	U-238	1.000E+00		1.449E-22	4.016E-21	9.206E-20	6.655E-18	4.147E-16	3.356E-14 1.267E-12 3.778E-11
Pb-210	ΣDOSE(j):			2.852E-16	3.663E-15	4.034E-14	9.987E-13	2.097E-11	4.820E-10 5.634E-09 4.948E-08
0Po-210	U-234	1.000E+00		4.060E-18	8.216E-17	1.289E-15	4.178E-14	9.841E-13	2.446E-11 3.041E-10 2.799E-09
Po-210	U-238	1.000E+00		2.272E-24	8.100E-23	2.683E-21	2.660E-19	1.912E-17	1.691E-15 6.789E-14 2.118E-12
Po-210	ΣDOSE(j):			4.060E-18	8.216E-17	1.289E-15	4.178E-14	9.841E-13	2.447E-11 3.042E-10 2.801E-09
0Th-230	U-234	1.339E-06		1.621E-16	4.861E-16	1.133E-15	3.391E-15	9.777E-15	3.138E-14 8.714E-14 2.272E-13
Th-230	U-238	1.339E-06		1.501E-22	9.600E-22	4.991E-21	4.429E-20	3.695E-19	3.873E-18 3.134E-17 2.475E-16
Th-230	ΣDOSE(j):			1.621E-16	4.861E-16	1.133E-15	3.391E-15	9.777E-15	3.139E-14 8.717E-14 2.274E-13
0Ra-226	U-234	1.339E-06		1.108E-16	7.088E-16	3.685E-15	3.268E-14	2.722E-13	2.838E-12 2.263E-11 1.704E-10
Ra-226	U-238	1.339E-06		7.630E-23	9.815E-22	1.095E-20	2.853E-19	6.875E-18	2.353E-16 5.558E-15 1.342E-13
Ra-226	ΣDOSE(j):			1.108E-16	7.088E-16	3.685E-15	3.268E-14	2.722E-13	2.838E-12 2.263E-11 1.705E-10
0Pb-210	U-234	1.339E-06		1.941E-21	2.493E-20	2.745E-19	6.792E-18	1.424E-16	3.259E-15 3.789E-14 3.310E-13
Pb-210	U-238	1.339E-06		1.585E-27	2.858E-26	6.267E-25	4.526E-23	2.816E-21	2.270E-19 8.526E-18 2.532E-16
Pb-210	ΣDOSE(j):			1.941E-21	2.493E-20	2.745E-19	6.792E-18	1.424E-16	3.260E-15 3.790E-14 3.313E-13
0U-235	U-235	1.000E+00		2.555E-04	2.553E-04	2.550E-04	2.536E-04	2.498E-04	2.369E-04 2.037E-04 1.200E-04
0Pa-231	U-235	1.000E+00		7.172E-10	2.150E-09	5.010E-09	1.495E-08	4.277E-08	1.336E-07 3.426E-07 6.670E-07
0Ac-227	U-235	1.000E+00		1.140E-10	7.221E-10	3.675E-09	3.025E-08	2.063E-07	1.237E-06 4.024E-06 8.449E-06
0U-238	U-238	5.450E-07		1.399E-12	1.398E-12	1.396E-12	1.389E-12	1.369E-12	1.300E-12 1.118E-12 6.585E-13
U-238	U-238	1.000E+00		1.390E-03	1.389E-03	1.387E-03	1.380E-03	1.359E-03	1.289E-03 1.108E-03 6.528E-04
U-238	ΣDOSE(j):			1.390E-03	1.389E-03	1.387E-03	1.380E-03	1.359E-03	1.289E-03 1.108E-03 6.528E-04
0U-238	U-238	1.339E-06		1.862E-09	1.860E-09	1.858E-09	1.848E-09	1.820E-09	1.726E-09 1.484E-09 8.741E-10
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 52									
Parent Dose Report									
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1									
File : SHIPROCK_ALT1_OFFSITE RESE.ROF									

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated									
ONuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr						
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02 3.000E+02 1.000E+03
U-234	U-238	1.339E-06		3.844E-18	1.153E-17	2.685E-17	8.016E-17	2.295E-16	7.182E-16 1.847E-15 3.619E-15

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 53
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Individual Nuclide Soil Concentration Parent Nuclide and Thread Fraction Indicated										
Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g							
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02
U-234	U-234	1.000E+00		1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.376E+01	1.183E+01
U-234	U-234	1.339E-06		1.988E-05	1.987E-05	1.984E-05	1.973E-05	1.944E-05	1.843E-05	1.584E-05
U-234	U-238	1.000E+00		0.000E+00	3.690E-05	1.105E-04	3.665E-04	1.083E-03	3.424E-03	8.827E-03
U-234	ΣS(j):			1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.377E+01	1.184E+01
0Th-230	U-234	1.000E+00		0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.658E-02
Th-230	U-238	1.000E+00		0.000E+00	1.715E-10	1.531E-09	1.690E-08	1.505E-07	1.614E-06	1.314E-05
Th-230	ΣS(j):			0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.659E-02
0Ra-226	U-234	1.000E+00		0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03
Ra-226	U-238	1.000E+00		0.000E+00	2.540E-14	6.675E-13	2.441E-11	6.499E-10	2.304E-08	5.496E-07
Ra-226	ΣS(j):			0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03
0Pb-210	U-234	1.000E+00		0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.822E-03
Pb-210	U-238	1.000E+00		0.000E+00	2.104E-16	1.566E-14	1.797E-12	1.278E-10	1.078E-08	4.094E-07
Pb-210	ΣS(j):			0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.823E-03
0Po-210	U-234	1.000E+00		0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03
Po-210	U-238	1.000E+00		0.000E+00	6.291E-17	8.792E-15	1.464E-12	1.191E-10	1.055E-08	4.063E-07
Po-210	ΣS(j):			0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03
0Th-230	U-234	1.339E-06		0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.422E-09	1.760E-08	4.898E-08
Th-230	U-238	1.339E-06		0.000E+00	2.296E-16	2.049E-15	2.263E-14	2.015E-13	2.161E-12	1.759E-11
Th-230	ΣS(j):			0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.423E-09	1.760E-08	4.900E-08
0Ra-226	U-234	1.339E-06		0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.000E-09
Ra-226	U-238	1.339E-06		0.000E+00	3.411E-20	8.938E-19	3.269E-17	8.702E-16	3.085E-14	7.359E-13
Ra-226	ΣS(j):			0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.001E-09
0Pb-210	U-234	1.339E-06		0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09
Pb-210	U-238	1.339E-06		0.000E+00	3.417E-22	2.096E-20	2.406E-18	1.711E-16	1.443E-14	5.482E-13
Pb-210	ΣS(j):			0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09
0U-235	U-235	1.000E+00		9.550E-01	9.543E-01	9.528E-01	9.478E-01	9.336E-01	8.855E-01	7.612E-01
0Pa-231	U-235	1.000E+00		0.000E+00	2.019E-05	6.048E-05	2.005E-04	5.924E-04	1.871E-03	4.816E-03
0Ac-227	U-235	1.000E+00		0.000E+00	3.211E-07	2.804E-06	2.870E-05	2.088E-04	1.280E-03	4.183E-03
0U-238	U-238	5.450E-07		7.129E-06	7.123E-06	7.112E-06	7.075E-06	6.969E-06	6.609E-06	5.682E-06
U-238	U-238	1.000E+00		1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01
U-238	ΣS(j):			1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01
0U-238	U-238	1.339E-06		1.751E-05	1.750E-05	1.747E-05	1.738E-05	1.712E-05	1.624E-05	1.396E-05

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 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-238	1.339E-06		0.000E+00	4.941E-11	1.480E-10	4.908E-10	1.450E-09	4.584E-09	1.182E-08	2.318E-08

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Run Time Information

ResOCalc.EXE execution began at 13:10 on 03/28/2023

ResOCalc.EXE execution ended at 13:11 on 03/28/2023

ResOCalc.EXE execution time 22.224 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years	2
Time = 1.000E+00 years	3
Time = 3.000E+00 years	4
Time = 1.000E+01 years	5
Time = 3.000E+01 years	6
Time = 1.000E+02 years	7
Time = 3.000E+02 years	8
Time = 1.000E+03 years	9

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-10	3.3E-13	0.0E+00	1.3E-15	2.9E-17	2.6E-18	9.2E-19	1.1E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-10	3.7E-11	0.0E+00	1.2E-13	1.8E-14	9.2E-17	7.4E-17	7.2E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-16	8.5E-18	0.0E+00	1.6E-18	4.2E-20	5.1E-20	1.4E-21	2.9E-16
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-18	1.9E-18	0.0E+00	8.2E-19	9.1E-20	2.9E-20	8.1E-22	4.1E-18
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-11	1.7E-15	0.0E+00	8.0E-17	2.2E-18	8.0E-18	5.6E-20	8.3E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-11	1.1E-10	0.0E+00	3.6E-13	1.4E-15	2.8E-16	2.2E-16	1.2E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-08	2.2E-06	0.0E+00	1.8E-08	2.0E-10	1.1E-09	7.5E-12	2.3E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-04	1.3E-07	0.0E+00	1.1E-09	1.2E-11	6.9E-11	4.6E-13	2.6E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.7E-06	0.0E+00	1.5E-08	1.7E-10	9.6E-10	6.4E-12	1.4E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03	4.0E-06	0.0E+00	3.5E-08	3.9E-10	2.2E-09	1.4E-11	1.6E-03

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-10	2.1E-12	0.0E+00	8.1E-15	9.6E-17	1.7E-17	1.1E-17	7.2E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-09	1.1E-10	0.0E+00	3.7E-13	5.8E-14	2.3E-16	4.7E-16	2.2E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-15	1.1E-16	0.0E+00	2.1E-17	5.7E-19	6.6E-19	3.1E-20	3.7E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-17	3.8E-17	0.0E+00	1.7E-17	2.3E-18	5.9E-19	2.6E-20	8.2E-17
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.3E-10	1.1E-14	0.0E+00	5.4E-16	1.6E-17	5.2E-17	6.8E-19	5.3E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.3E-11	3.3E-10	0.0E+00	1.1E-12	3.9E-15	6.8E-16	1.4E-15	3.6E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-08	2.2E-06	0.0E+00	1.8E-08	2.0E-10	1.1E-09	2.2E-11	2.3E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-04	1.3E-07	0.0E+00	1.1E-09	1.2E-11	6.9E-11	1.4E-12	2.6E-04

U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.7E-06	0.0E+00	1.6E-08	1.7E-10	9.6E-10	1.9E-11	1.4E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03	4.0E-06	0.0E+00	3.5E-08	3.9E-10	2.2E-09	4.3E-11	1.6E-03

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 4
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 3 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-09	1.1E-11	0.0E+00	4.2E-14	2.5E-16	8.6E-17	1.2E-16	3.7E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-09	2.6E-10	0.0E+00	8.8E-13	1.4E-13	4.9E-16	2.4E-15	5.0E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.9E-14	1.2E-15	0.0E+00	2.4E-16	6.5E-18	7.4E-18	6.9E-19	4.0E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-16	6.0E-16	0.0E+00	2.7E-16	3.9E-17	9.4E-18	7.8E-19	1.3E-15
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-09	5.5E-14	0.0E+00	3.2E-15	9.4E-17	2.8E-16	7.5E-18	2.8E-09
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-11	7.7E-10	0.0E+00	2.5E-12	8.8E-15	1.4E-15	7.4E-15	8.5E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-08	2.2E-06	0.0E+00	1.8E-08	2.1E-10	1.1E-09	5.2E-11	2.3E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-04	1.3E-07	0.0E+00	1.1E-09	1.3E-11	7.0E-11	3.1E-12	2.5E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.7E-06	0.0E+00	1.6E-08	1.8E-10	9.7E-10	4.4E-11	1.4E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03	4.0E-06	0.0E+00	3.5E-08	4.0E-10	2.2E-09	9.9E-11	1.6E-03

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 5
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 10 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-08	8.7E-11	0.0E+00	3.5E-13	1.0E-15	7.4E-16	2.6E-15	3.0E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	7.6E-10	0.0E+00	2.9E-12	4.8E-13	1.5E-15	2.0E-14	1.5E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.6E-13	3.0E-14	0.0E+00	6.7E-15	1.8E-16	1.9E-16	4.8E-17	1.0E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-14	1.9E-14	0.0E+00	8.7E-15	1.4E-15	3.1E-16	7.0E-17	4.2E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-08	4.9E-13	0.0E+00	3.9E-14	1.1E-15	2.9E-15	1.9E-16	2.4E-08
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-10	2.3E-09	0.0E+00	7.7E-12	2.7E-14	4.2E-15	6.5E-14	2.5E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.2E-08	2.2E-06	0.0E+00	1.9E-08	2.2E-10	1.2E-09	1.5E-10	2.3E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-04	1.3E-07	0.0E+00	1.1E-09	1.3E-11	7.2E-11	9.0E-12	2.5E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.7E-06	0.0E+00	1.6E-08	1.9E-10	1.0E-09	1.3E-10	1.4E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03	4.0E-06	0.0E+00	3.6E-08	4.2E-10	2.3E-09	2.8E-10	1.6E-03

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 6
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 30 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-07	5.9E-10	0.0E+00	2.5E-12	4.6E-15	5.4E-15	4.2E-14	2.1E-07

Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-08	2.2E-09	0.0E+00	1.0E-11	1.7E-12	4.7E-15	1.5E-13	4.3E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-11	6.3E-13	0.0E+00	1.8E-13	4.8E-15	4.7E-15	2.7E-15	2.1E-11
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-13	4.4E-13	0.0E+00	2.1E-13	3.8E-14	7.9E-15	4.3E-15	9.8E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-07	4.1E-12	0.0E+00	5.6E-13	1.5E-14	3.3E-14	4.3E-15	2.0E-07
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-10	6.6E-09	0.0E+00	2.3E-11	9.0E-14	1.3E-14	5.2E-13	7.3E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.1E-08	2.2E-06	0.0E+00	2.0E-08	2.5E-10	1.3E-09	3.7E-10	2.3E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-04	1.2E-07	0.0E+00	1.2E-09	1.5E-11	7.7E-11	2.2E-11	2.5E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.6E-06	0.0E+00	1.7E-08	2.1E-10	1.1E-09	3.1E-10	1.4E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.6E-03 3.9E-06 0.0E+00 3.8E-08 4.8E-10 2.4E-09 7.0E-10 1.6E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 7

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 100 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-06	3.6E-09	0.0E+00	1.6E-11	2.5E-14	3.6E-14	4.8E-13	1.2E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-07	6.8E-09	0.0E+00	4.4E-11	7.5E-12	1.8E-14	1.0E-12	1.3E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.6E-10	1.4E-11	0.0E+00	6.3E-12	1.7E-13	1.5E-13	1.6E-13	4.8E-10
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.7E-12	1.0E-11	0.0E+00	5.6E-12	1.2E-12	2.3E-13	2.7E-13	2.4E-11
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-06	4.2E-11	0.0E+00	1.2E-11	3.1E-13	5.9E-13	1.2E-13	2.1E-06
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-09	2.1E-08	0.0E+00	8.0E-11	4.1E-13	5.3E-14	4.9E-12	2.3E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-08	2.0E-06	0.0E+00	2.1E-08	3.0E-10	1.4E-09	7.6E-10	2.1E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-04	1.2E-07	0.0E+00	1.3E-09	1.8E-11	8.5E-11	4.6E-11	2.4E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	1.5E-06	0.0E+00	1.8E-08	2.6E-10	1.2E-09	6.4E-10	1.3E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.5E-03 3.7E-06 0.0E+00 4.0E-08 5.8E-10 2.7E-09 1.5E-09 1.5E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 8

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 300 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.0E-06	1.2E-08	0.0E+00	5.5E-11	8.1E-14	1.2E-13	1.9E-12	4.0E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-07	1.8E-08	0.0E+00	1.3E-10	2.2E-11	5.1E-14	3.3E-12	3.4E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-09	1.7E-10	0.0E+00	1.1E-10	3.0E-12	2.3E-12	3.4E-12	5.6E-09
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.8E-11	1.2E-10	0.0E+00	7.4E-11	2.0E-11	3.3E-12	5.8E-12	3.0E-10
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-05	3.4E-10	0.0E+00	1.7E-10	4.2E-12	7.3E-12	1.7E-12	1.7E-05
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-09	5.9E-08	0.0E+00	2.7E-10	1.9E-12	2.1E-13	3.4E-11	6.5E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-08	1.8E-06	0.0E+00	1.9E-08	2.9E-10	1.3E-09	8.5E-10	1.8E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-04	1.0E-07	0.0E+00	1.2E-09	1.8E-11	7.9E-11	5.2E-11	2.0E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	1.3E-06	0.0E+00	1.6E-08	2.5E-10	1.1E-09	7.2E-10	1.1E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.3E-03 3.3E-06 0.0E+00 3.7E-08 6.0E-10 2.5E-09 1.7E-09 1.3E-03

0*Sum of dose from all releases and from primary contamination.

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Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

[illegible]

0*Sum of dose from all releases and from primary contamination.

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Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)

DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)
DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

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T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
	DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
	DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
	DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
	DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
	DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
	DCSF	Soil ingestion, slope factors, 1/(pCi):			
	DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
	DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
	DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
	DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
	DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)

DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	8.94E-17	0	1.08E-19	0	5.18E-22	0	1.19E-23	0	1.07E-24	0	3.74E-25	0	8.95E-17	0
Pa-231	5.39E-16	0	3.29E-18	0	1.54E-20	0	2.30E-21	0	1.17E-23	0	9.38E-24	0	5.42E-16	0
Pb-210	1.39E-22	0	6.55E-24	0	7.49E-25	0	1.93E-26	0	2.37E-26	0	6.43E-28	0	1.46E-22	0

Po-210	9.71E-25	0	1.75E-24	0	4.11E-25	0	4.58E-26	0	1.47E-26	0	4.06E-28	0	3.19E-24	0
Ra-226	6.65E-17	0	1.33E-21	0	3.98E-23	0	1.11E-24	0	3.95E-24	0	2.76E-26	0	6.65E-17	0
Th-230	8.45E-18	0	9.94E-18	0	5.42E-20	0	2.12E-22	0	4.18E-23	0	3.36E-23	0	1.84E-17	0
U-234	6.08E-14	0	1.76E-12	0	9.45E-15	0	1.05E-16	0	5.85E-16	0	3.92E-18	0	1.84E-12	0
U-235	2.01E-10	17	1.02E-13	0	6.21E-16	0	6.89E-18	0	3.85E-17	0	2.58E-19	0	2.01E-10	17
U-238	1.01E-09	83	1.32E-12	0	1.05E-14	0	1.17E-16	0	6.51E-16	0	4.36E-18	0	1.01E-09	83
<hr/>														
Total	1.21E-09	100	3.19E-12	0	2.06E-14	0	2.28E-16	0	1.27E-15	0	8.53E-18	0	1.22E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 5

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
<hr/>									
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide		From releases to ground water and to surface water																
		Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water		
		risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.09E-14	0	1.76E-12	0	0.00E+00	0	9.45E-15	0	1.05E-16	0	5.85E-16	0	3.92E-18	0	1.84E-12	0

U-235	2.01E-10	17	1.02E-13	0	0.00E+00	0	6.21E-16	0	6.89E-18	0	3.85E-17	0	2.58E-19	0	2.01E-10	17
U-238	1.01E-09	83	1.32E-12	0	0.00E+00	0	1.05E-14	0	1.17E-16	0	6.51E-16	0	4.36E-18	0	1.01E-09	83
Total	1.21E-09	100	3.19E-12	0	0.00E+00	0	2.06E-14	0	2.28E-16	0	1.27E-15	0	8.53E-18	0	1.22E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 6

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0 Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	5.66E-16	0	6.85E-19	0	3.30E-21	0	3.90E-23	0	6.80E-24	0	4.53E-24	0	5.67E-16	0
Pa-231	1.61E-15	0	9.86E-18	0	4.67E-20	0	7.35E-21	0	2.90E-23	0	5.97E-23	0	1.62E-15	0
Pb-210	1.79E-21	0	8.42E-23	0	9.89E-24	0	2.63E-25	0	3.05E-25	0	1.43E-26	0	1.88E-21	0
Po-210	1.94E-23	0	3.49E-23	0	8.48E-24	0	1.16E-24	0	2.99E-25	0	1.30E-26	0	6.43E-23	0
Ra-226	4.25E-16	0	8.49E-21	0	2.69E-22	0	7.94E-24	0	2.59E-23	0	3.39E-25	0	4.25E-16	0
Th-230	2.53E-17	0	2.98E-17	0	1.63E-19	0	5.82E-22	0	1.03E-22	0	2.15E-22	0	5.53E-17	0
U-234	6.08E-14	0	1.76E-12	0	9.48E-15	0	1.06E-16	0	5.89E-16	0	1.17E-17	0	1.83E-12	0
U-235	2.01E-10	17	1.02E-13	0	6.23E-16	0	6.96E-18	0	3.87E-17	0	7.68E-19	0	2.01E-10	17
U-238	1.01E-09	83	1.32E-12	0	1.05E-14	0	1.18E-16	0	6.55E-16	0	1.30E-17	0	1.01E-09	83
Total	1.21E-09	100	3.19E-12	0	2.06E-14	0	2.30E-16	0	1.28E-15	0	2.54E-17	0	1.21E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 7

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.12E-14	0	1.76E-12	0	0.00E+00	0	9.48E-15	0	1.06E-16	0	5.89E-16	0	1.17E-17	0	1.83E-12	0
U-235	2.01E-10	17	1.02E-13	0	0.00E+00	0	6.23E-16	0	6.96E-18	0	3.87E-17	0	7.68E-19	0	2.01E-10	17
U-238	1.01E-09	83	1.32E-12	0	0.00E+00	0	1.05E-14	0	1.18E-16	0	6.55E-16	0	1.30E-17	0	1.01E-09	83
Total	1.21E-09	100	3.19E-12	0	0.00E+00	0	2.06E-14	0	2.30E-16	0	1.28E-15	0	2.54E-17	0	1.21E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.88E-15	0	3.49E-18	0	1.69E-20	0	1.02E-22	0	3.51E-23	0	4.79E-23	0	2.89E-15	0
Pa-231	3.76E-15	0	2.30E-17	0	1.13E-19	0	1.81E-20	0	6.18E-23	0	3.06E-22	0	3.79E-15	0
Pb-210	1.97E-20	0	9.27E-22	0	1.13E-22	0	3.00E-24	0	3.40E-24	0	3.17E-25	0	2.07E-20	0
Po-210	3.03E-22	0	5.45E-22	0	1.34E-22	0	1.98E-23	0	4.72E-24	0	3.93E-25	0	1.01E-21	0
Ra-226	2.21E-15	0	4.41E-20	0	1.57E-21	0	4.68E-23	0	1.41E-22	0	3.72E-24	0	2.21E-15	0
Th-230	5.91E-17	0	6.95E-17	0	3.81E-19	0	1.32E-21	0	2.17E-22	0	1.11E-21	0	1.29E-16	0
U-234	6.07E-14	0	1.76E-12	0	9.55E-15	0	1.08E-16	0	5.95E-16	0	2.68E-17	0	1.83E-12	0
U-235	2.00E-10	17	1.02E-13	0	6.28E-16	0	7.10E-18	0	3.91E-17	0	1.76E-18	0	2.01E-10	17
U-238	1.01E-09	83	1.32E-12	0	1.06E-14	0	1.20E-16	0	6.62E-16	0	2.98E-17	0	1.01E-09	83
Total	1.21E-09	100	3.18E-12	0	2.08E-14	0	2.35E-16	0	1.30E-15	0	5.85E-17	0	1.21E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t = 3 years								
Radionuclides								
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.30E-14	0	1.76E-12	0	0.00E+00	0	9.55E-15	0	1.08E-16	0	5.95E-16	0	2.68E-17	0	1.83E-12	0
U-235	2.00E-10	17	1.02E-13	0	0.00E+00	0	6.28E-16	0	7.12E-18	0	3.91E-17	0	1.76E-18	0	2.01E-10	17
U-238	1.01E-09	83	1.32E-12	0	0.00E+00	0	1.06E-14	0	1.20E-16	0	6.62E-16	0	2.98E-17	0	1.01E-09	83
Total	1.21E-09	100	3.18E-12	0	0.00E+00	0	2.08E-14	0	2.35E-16	0	1.30E-15	0	5.85E-17	0	1.21E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 10

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years
From releases to ground water and to surface water

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	8.02E-14	0	1.75E-12	0	0.00E+00	0	9.77E-15	0	1.15E-16	0	6.15E-16	0	7.63E-17	0	1.84E-12	0
U-235	1.99E-10	17	1.01E-13	0	0.00E+00	0	6.43E-16	0	7.62E-18	0	4.04E-17	0	5.02E-18	0	2.00E-10	17
U-238	1.00E-09	83	1.31E-12	0	0.00E+00	0	1.09E-14	0	1.28E-16	0	6.84E-16	0	8.49E-17	0	1.01E-09	83
Total	1.20E-09	100	3.17E-12	0	0.00E+00	0	2.13E-14	0	2.50E-16	0	1.34E-15	0	1.66E-16	0	1.21E-09	100

*** Sum of risk from all releases and from primary contamination via all pathways.

File : SHIPROCK ALT1 OFFSITE RESE.ROF

[illegible]

Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
<hr/>														
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.62E-13	0	1.96E-16	0	1.03E-18	0	1.87E-21	0	2.20E-21	0	1.71E-20	0	1.62E-13	0
Pa-231	3.21E-14	0	1.96E-16	0	1.32E-18	0	2.20E-19	0	5.93E-22	0	1.88E-20	0	3.23E-14	0
Pb-210	1.02E-17	0	4.80E-19	0	8.23E-20	0	2.23E-21	0	2.17E-21	0	1.25E-21	0	1.08E-17	0
Po-210	2.25E-19	0	4.05E-19	0	1.06E-19	0	1.91E-20	0	3.96E-21	0	2.18E-21	0	7.61E-19	0
Ra-226	1.63E-13	0	3.26E-18	0	2.79E-19	0	7.50E-21	0	1.66E-20	0	2.12E-21	0	1.63E-13	0
Th-230	5.10E-16	0	5.99E-16	0	3.43E-18	0	1.36E-20	0	1.97E-21	0	7.78E-20	0	1.11E-15	0
U-234	5.95E-14	0	1.73E-12	0	1.03E-14	0	1.31E-16	0	6.60E-16	0	1.91E-16	0	1.80E-12	0
U-235	1.96E-10	17	9.97E-14	0	6.75E-16	0	8.60E-18	0	4.34E-17	0	1.26E-17	0	1.97E-10	17
U-238	9.89E-10	83	1.29E-12	0	1.14E-14	0	1.45E-16	0	7.34E-16	0	2.13E-16	0	9.90E-10	83
<hr/>														
Total	1.19E-09	100	3.12E-12	0	2.24E-14	0	2.85E-16	0	1.44E-15	0	4.16E-16	0	1.19E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 30 years

0

Radon Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
<hr/>									
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

0

From releases to ground water and to surface water

0

Ground Fish Radon Plant Meat Milk Soil Water

Radio-Nuclide	risk		%		risk		%		risk		%		risk		%		risk		%	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.23E-13	0	1.73E-12	0	0.00E+00	0	1.03E-14	0	1.31E-16	0	6.60E-16	0	1.91E-16	0	1.96E-12	0
U-235	1.97E-10	17	1.00E-13	0	0.00E+00	0	6.77E-16	0	8.82E-18	0	4.34E-17	0	1.26E-17	0	1.97E-10	17
U-238	9.89E-10	83	1.29E-12	0	0.00E+00	0	1.14E-14	0	1.45E-16	0	7.35E-16	0	2.13E-16	0	9.90E-10	83
Total	1.19E-09	100	3.12E-12	0	0.00E+00	0	2.24E-14	0	2.85E-16	0	1.44E-15	0	4.16E-16	0	1.19E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 14

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

From releases to ground water and to surface water																
Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water			
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%		
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		

0

Radio-Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	9.70E-13	0	1.17E-15	0	6.67E-18	0	1.02E-20	0	1.46E-20	0	1.94E-19	0	9.72E-13	0
Pa-231	1.00E-13	0	6.12E-16	0	5.62E-18	0	9.57E-19	0	2.28E-21	0	1.27E-19	0	1.01E-13	0
Pb-210	2.33E-16	0	1.10E-17	0	2.90E-18	0	8.03E-20	0	6.77E-20	0	7.50E-20	0	2.47E-16	0
Po-210	5.34E-18	0	9.61E-18	0	2.80E-18	0	6.27E-19	0	1.14E-19	0	1.36E-19	0	1.86E-17	0
Ra-226	1.70E-12	0	3.40E-17	0	6.08E-18	0	1.56E-19	0	2.93E-19	0	5.83E-20	0	1.70E-12	0
Th-230	1.63E-15	0	1.92E-15	0	1.21E-17	0	6.16E-20	0	7.91E-21	0	7.31E-19	0	3.57E-15	0
U-234	5.64E-14	0	1.64E-12	0	1.09E-14	0	1.56E-16	0	7.26E-16	0	3.94E-16	0	1.70E-12	0
U-235	1.86E-10	16	9.46E-14	0	7.17E-16	0	1.03E-17	0	4.77E-17	0	2.59E-17	0	1.86E-10	16
U-238	9.38E-10	83	1.23E-12	0	1.21E-14	0	1.74E-16	0	8.08E-16	0	4.38E-16	0	9.39E-10	83
Total	1.13E-09	100	2.96E-12	0	2.38E-14	0	3.42E-16	0	1.58E-15	0	8.59E-16	0	1.13E-09	100

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 100 years
Radionuclides

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.76E-12	0	1.64E-12	0	0.00E+00	0	1.09E-14	0	1.57E-16	0	7.26E-16	0	3.95E-16	0
U-235	1.87E-10	17	9.64E-14	0	0.00E+00	0	7.29E-16	0	1.12E-17	0	4.77E-17	0	2.62E-17	0
U-238	9.38E-10	83	1.23E-12	0	0.00E+00	0	1.21E-14	0	1.74E-16	0	8.08E-16	0	4.38E-16	0
Total	1.13E-09	100	2.96E-12	0	0.00E+00	0	2.38E-14	0	3.42E-16	0	1.58E-15	0	8.59E-16	0

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 16

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	3.16E-12	0	3.82E-15	0	2.24E-17	0	3.30E-20	0	4.95E-20	0	7.61E-19	0	3.16E-12	0

U-234	1.36E-11	1	1.41E-12	0	0.00E+00	0	1.01E-14	0	1.63E-16	0	6.78E-16	0	4.51E-16	0	1.50E-11	2
U-235	1.64E-10	17	8.67E-14	0	0.00E+00	0	6.92E-16	0	1.27E-17	0	4.42E-17	0	3.02E-17	0	1.64E-10	17
U-238	8.06E-10	82	1.06E-12	0	0.00E+00	0	1.11E-14	0	1.67E-16	0	7.48E-16	0	4.91E-16	0	8.07E-10	82
Total	9.83E-10	100	2.55E-12	0	0.00E+00	0	2.19E-14	0	3.43E-16	0	1.47E-15	0	9.72E-16	0	9.86E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 18

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

0	From releases to ground water and to surface water													
0	Ground		Fish		Plant		Meat		Milk		Soil		Water	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0	Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t = 1000 years													
0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
0	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	6.63E-12	1	8.01E-15	0	4.70E-17	0	6.72E-20	0	1.04E-19	0	1.59E-18	0	6.63E-12	1
Pa-231	5.01E-13	0	3.06E-15	0	3.25E-17	0	5.58E-18	0	1.27E-20	0	8.40E-19	0	5.04E-13	0
Pb-210	2.36E-14	0	1.11E-15	0	5.54E-16	0	1.56E-17	0	1.14E-17	0	1.97E-17	0	2.53E-14	0
Po-210	5.48E-16	0	9.86E-16	0	3.61E-16	0	1.09E-16	0	1.69E-17	0	3.59E-17	0	2.06E-15	0
Ra-226	1.02E-10	15	2.04E-15	0	8.85E-16	0	2.20E-17	0	3.72E-17	0	9.56E-18	0	1.02E-10	15
Th-230	1.18E-14	0	1.39E-14	0	1.60E-16	0	1.69E-18	0	1.70E-19	0	3.92E-17	0	2.59E-14	0
U-234	2.86E-14	0	8.28E-13	0	5.87E-15	0	8.88E-17	0	3.98E-16	0	2.64E-16	0	8.63E-13	0
U-235	9.43E-11	14	4.79E-14	0	3.86E-16	0	5.84E-18	0	2.61E-17	0	1.73E-17	0	9.44E-11	14
U-238	4.75E-10	70	6.21E-13	0	6.53E-15	0	9.88E-17	0	4.42E-16	0	2.93E-16	0	4.75E-10	70

Total	6.79E-10	100	1.53E-12	0	1.48E-14	0	3.47E-16	0	9.32E-16	0	6.81E-16	0	6.80E-10	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:10 Page 19
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESE.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 1000 years
 Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.02E-10	15	8.44E-13	0	0.00E+00	0	7.81E-15	0	2.36E-16	0	4.62E-16	0	3.67E-16	0	1.03E-10	15
U-235	1.01E-10	15	5.90E-14	0	0.00E+00	0	4.66E-16	0	1.15E-17	0	2.63E-17	0	1.98E-17	0	1.02E-10	15
U-238	4.75E-10	70	6.23E-13	0	0.00E+00	0	6.55E-15	0	9.91E-17	0	4.43E-16	0	2.94E-16	0	4.76E-10	70
Total	6.79E-10	100	1.53E-12	0	0.00E+00	0	1.48E-14	0	3.47E-16	0	9.32E-16	0	6.81E-16	0	6.80E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Attachment D-14-12a. Offsite Receptor Location 2, Resident Farmer Tap Water Inputs, Chemical Risk, Alternative 1

[/HTML"Output to XLS](/tmp/Farmer_chem_raisk_risk_16MAY2023_risk1139235.xlsx)

[/HTML"Output to PDF</div>](/tmp/Farmer_chem_raisk_risk_16MAY2023_risk1139235.pdf)

Variable	Farmer Contaminated Water Default Value	Site-Specific Value
BW _{far-a} (body weight - adult) kg	80	80
BW _{far-c} (body weight - child) kg	15	15
CF _{far-beef} (contaminated intake fraction - beef) unitless	1	1
CF _{far-dairy} (contaminated intake fraction - dairy) unitless	1	1
CF _{far-produce} (contaminated intake fraction) unitless	1	1
ED _{far-a} (exposure duration - adult) y	34	34
ED _{far-c} (exposure duration - child) y	6	6
EF _{far-a} (exposure frequency - adult) day/y	350	350
EF _{far-c} (exposure frequency - child) day/y	350	350
IFB _{far-adj} (age-adjusted beef intake rate) mg-year/kg-day	32091500	32091500
IFD _{far-adj} (age-adjusted dairy intake rate) mg-year/kg-day	115213000	115213000
IFF _{far-adj} (age-adjusted fruit intake rate) mg-year/kg-day	35833000	35833000
IFV _{far-adj} (age-adjusted vegetable intake rate) mg-year/kg-day	24535875	24535875
IRB _{far-a} (beef intake rate - adult) mg/day	178000	178000
IRB _{far-c} (beef intake rate - child) mg/day	40100	40100
IRD _{far-a} (dairy intake rate - adult) mg/day	445600	445600
IRD _{far-c} (dairy intake rate - child) mg/day	349500	349500
IRF _{far-a} (fruit intake rate - adult) mg/day	176800	176800
IRF _{far-c} (fruit intake rate - child) mg/day	68100	68100
IRV _{far-a} (vegetable intake rate - adult) mg/day	125700	125700
IRV _{far-c} (vegetable intake rate - child) mg/day	41700	41700
LT (lifetime - resident) yr	70	70
MLF _{pasture} (pasture plant mass loading factor) unitless	0.25	0.25
MLF _{produce} (produce plant mass loading factor) unitless	0.0135	0.0135
F (irrigation period) unitless	0.25	0.25
I _f (interception fraction) unitless	0.42	0.42
I _r (Irrigation rate) L/m ² -day	3.62	3.62
Lambda _{HL} (soil leaching rate) 1/day	0.000027	0.000027
P (area density for root zone) kg/m ²	240	240
Q _{w-beef} (beef water intake rate) L/day	53	53
Q _{w-dairy} (dairy water intake rate) L/day	92	92
T (translocation factor) unitless	1	1
t _b (long term deposition and buildup) day	10950	10950
t _v (above ground exposure time) day	60	60
t _w (weathering half-life) day	14	14
Y _v (plant yield - wet) kg/m ²	2	2

Output generated 16MAY2023:05:29:34

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Dose Conversion Factor (and Related) Parameter Summary
 Current Library: DCFPAK3.02
 Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)

DCSF	Pa-234	(Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT (11)
DCSF	Pa-234m	(Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT (12)
DCSF	Pb-210	(Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT (13)
DCSF	Pb-211	(Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT (14)
DCSF	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT (15)
DCSF	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT (16)
DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:				
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/28/2023 13:15	Page 3	
	Parent Dose Report				
	Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1				
	File : SHIPROCK_ALT1_OFFSITE RESF.ROF				

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D		6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D		2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1		2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210		1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D		3.528E-02	3.528E-02	DCF2 (6)

DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)
DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)

TF					
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF					
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D	, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF					
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230	, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF					
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF					
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D	, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				

TF	Pa-231	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF					
TF	Pb-210+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF					
TF	Pb-210+D1	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF					
TF	Po-210	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF					
TF	Ra-226+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF					
TF	Th-230	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF					
TF	U-234	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF					
TF	U-235+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF					
TF	U-238	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF					
TF	U-238+D	, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D	, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)

TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210, fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210, crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)
TF				
TF	Ra-226+D, fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D, crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230, fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230, crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234, fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D, fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238, fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D, fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D, crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

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Parent Dose Report
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File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)

VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (8)
VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)

DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)

DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)
DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)

DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach(1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY(1)
LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	4.444E+01	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	7.574E+01	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	-2.711E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	-2.391E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	4.444E+01	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	7.574E+01	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	-3.100E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	-2.780E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	2.222E+01	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	1.222E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	-4.196E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	-3.196E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-1.111E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-1.110E+01	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	-4.196E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	-3.196E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-5.278E+01	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.667E+01	6.562E+01	---	DWELLXY(2)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	-2.906E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	-2.419E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)

TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T (2)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+00	3.000E+00	---	T (3)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+01	6.000E+00	---	T (4)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+01	1.200E+01	---	T (5)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+02	3.000E+01	---	T (6)
TIME	Times at which dose/risk are to be reported (yr)	3.000E+02	7.500E+01	---	T (7)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+03	1.750E+02	---	T (8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T (9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T (10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	7.340E-07	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
	PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
	PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
	PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
	PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
	PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
	PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
	PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
	PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
	PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
	PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
	PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV

PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	9.998E+03	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)

AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF (3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG (3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF (3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN (3)
AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB (3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY (3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP (3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG (3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC (3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF (3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO (4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT (4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN (4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF (4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG (4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF (4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN (4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB (4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY (4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP (4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG (4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC (4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF (4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.759E+03	1.000E+03	---	AREADWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name

AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX
AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
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AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,1)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ (4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ (4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ (5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ (5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ (6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ (1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ (1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ (1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ (1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ (1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ (2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ (2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ (2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ (2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ (2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ (3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ (3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ (3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,2)

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)

AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)

AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)

AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ (2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ (2,2,5)
AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ (2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ (2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ (2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ (3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ (3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ (3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ (3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ (4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ (4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ (5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ (5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ (6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,5)
AIRT	Joint Frequency in ESE Sector				

AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)
AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ (6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,6)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ (1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ (1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ (1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ (1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ (1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ (2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ (2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ (2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ (2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ (3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ (3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ (3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ (3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ (4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ (4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ (5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ (5,4,7)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	AIRT	Joint Frequency in SSE Sector				
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
	AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
	AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
	AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
	AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)

AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,8)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ (5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ (1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ (1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ (1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ (1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ (1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ (2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ (2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ (2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ (2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ (2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ (3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ (3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ (3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ (3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
AIRT	Joint Frequency in S Sector				

AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)

AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)

AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)
AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				

AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)
AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)

AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)

AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)

AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,15)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				

AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-1.000E+00	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	0.000E+00	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
0 = (total porosity + distribution coefficient*dry bulk density) / total porosity					

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0		User		RESRAD	
Menu	Parameter	Input	Default	computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)

USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ (1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR(1)
WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACTCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)

LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI(1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI(1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI(2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI(2,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	7.340E-07	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	7.340E-07	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	7.340E-07	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)

SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA (6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA (7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA (8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA (9)
SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA (10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA (11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA (12)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	4.483E+01	1.325E+01	---	RAD_SHAPE (13)
SEXT	Outer annular radius (m), ring 14:	8.967E+01	2.650E+01	---	RAD_SHAPE (14)
SEXT	Outer annular radius (m), ring 15:	1.345E+02	3.975E+01	---	RAD_SHAPE (15)
SEXT	Outer annular radius (m), ring 16:	1.793E+02	5.300E+01	---	RAD_SHAPE (16)
SEXT	Outer annular radius (m), ring 17:	2.242E+02	6.625E+01	---	RAD_SHAPE (17)
SEXT	Outer annular radius (m), ring 18:	2.690E+02	7.950E+01	---	RAD_SHAPE (18)
SEXT	Outer annular radius (m), ring 19:	3.138E+02	9.275E+01	---	RAD_SHAPE (19)
SEXT	Outer annular radius (m), ring 20:	3.587E+02	1.060E+02	---	RAD_SHAPE (20)
SEXT	Outer annular radius (m), ring 21:	4.035E+02	1.192E+02	---	RAD_SHAPE (21)
SEXT	Outer annular radius (m), ring 22:	4.483E+02	1.325E+02	---	RAD_SHAPE (22)
SEXT	Outer annular radius (m), ring 23:	4.932E+02	1.458E+02	---	RAD_SHAPE (23)
SEXT	Outer annular radius (m), ring 24:	5.380E+02	1.590E+02	---	RAD_SHAPE (24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA (13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA (14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA (15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA (16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA (17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA (18)
SEXT	Ring 19	4.500E-02	2.000E-01	---	FRACA (19)
SEXT	Ring 20	8.800E-02	1.700E-01	---	FRACA (20)
SEXT	Ring 21	9.700E-02	1.500E-01	---	FRACA (21)
SEXT	Ring 22	8.500E-02	1.300E-01	---	FRACA (22)
SEXT	Ring 23	7.000E-02	1.200E-01	---	FRACA (23)
SEXT	Ring 24	1.800E-02	5.200E-02	---	FRACA (24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	2.551E+02	2.551E+02	---	RAD_SHAPE (25)
SEXT	Outer annular radius (m), ring 26:	2.621E+02	2.621E+02	---	RAD_SHAPE (26)
SEXT	Outer annular radius (m), ring 27:	2.964E+02	2.964E+02	---	RAD_SHAPE (27)
SEXT	Outer annular radius (m), ring 28:	3.206E+02	3.206E+02	---	RAD_SHAPE (28)
SEXT	Outer annular radius (m), ring 29:	3.449E+02	3.449E+02	---	RAD_SHAPE (29)

SEXT	Outer annular radius (m), ring 30:	3.691E+02	3.691E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	3.934E+02	3.934E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	4.176E+02	4.176E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	4.419E+02	4.419E+02	---	RAD_SHAPE(33)
SEXT	Outer annular radius (m), ring 34:	4.661E+02	4.661E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	4.700E+02	4.700E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	4.899E+02	4.899E+02	---	RAD_SHAPE(36)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 36

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	3.732E-02	3.732E-02	---	FRACA(26)
SEXT	Ring 27	9.692E-02	9.692E-02	---	FRACA(27)
SEXT	Ring 28	1.126E-01	1.126E-01	---	FRACA(28)
SEXT	Ring 29	1.038E-01	1.038E-01	---	FRACA(29)
SEXT	Ring 30	9.639E-02	9.639E-02	---	FRACA(30)
SEXT	Ring 31	8.997E-02	8.997E-02	---	FRACA(31)
SEXT	Ring 32	8.437E-02	8.437E-02	---	FRACA(32)
SEXT	Ring 33	7.944E-02	7.944E-02	---	FRACA(33)
SEXT	Ring 34	7.506E-02	7.506E-02	---	FRACA(34)
SEXT	Ring 35	5.225E-02	5.225E-02	---	FRACA(35)
SEXT	Ring 36	1.548E-02	1.548E-02	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	2.940E+02	2.940E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	3.001E+02	3.001E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	3.305E+02	3.305E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	3.554E+02	3.554E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	3.803E+02	3.803E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	4.053E+02	4.053E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	4.302E+02	4.302E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	4.551E+02	4.551E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	4.801E+02	4.801E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	5.050E+02	5.050E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	5.086E+02	5.086E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	5.271E+02	5.271E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	3.242E-02	3.242E-02	---	FRACA(38)
SEXT	Ring 39	8.535E-02	8.535E-02	---	FRACA(39)
SEXT	Ring 40	1.006E-01	1.006E-01	---	FRACA(40)
SEXT	Ring 41	9.340E-02	9.340E-02	---	FRACA(41)
SEXT	Ring 42	8.721E-02	8.721E-02	---	FRACA(42)

SEXT	Ring 43	8.180E-02	8.180E-02	---	FRACA (43)
SEXT	Ring 44	7.704E-02	7.704E-02	---	FRACA (44)
SEXT	Ring 45	7.281E-02	7.281E-02	---	FRACA (45)
SEXT	Ring 46	6.903E-02	6.903E-02	---	FRACA (46)
SEXT	Ring 47	4.812E-02	4.812E-02	---	FRACA (47)
SEXT	Ring 48	1.429E-02	1.429E-02	---	FRACA (48)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 37

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	3.696E+02	3.696E+02	---	RAD_SHAPE (49)
SEXT	Outer annular radius (m), ring 50:	3.766E+02	3.766E+02	---	RAD_SHAPE (50)
SEXT	Outer annular radius (m), ring 51:	3.948E+02	3.948E+02	---	RAD_SHAPE (51)
SEXT	Outer annular radius (m), ring 52:	4.213E+02	4.213E+02	---	RAD_SHAPE (52)
SEXT	Outer annular radius (m), ring 53:	4.479E+02	4.479E+02	---	RAD_SHAPE (53)
SEXT	Outer annular radius (m), ring 54:	4.744E+02	4.744E+02	---	RAD_SHAPE (54)
SEXT	Outer annular radius (m), ring 55:	5.010E+02	5.010E+02	---	RAD_SHAPE (55)
SEXT	Outer annular radius (m), ring 56:	5.275E+02	5.275E+02	---	RAD_SHAPE (56)
SEXT	Outer annular radius (m), ring 57:	5.541E+02	5.541E+02	---	RAD_SHAPE (57)
SEXT	Outer annular radius (m), ring 58:	5.806E+02	5.806E+02	---	RAD_SHAPE (58)
SEXT	Outer annular radius (m), ring 59:	5.851E+02	5.851E+02	---	RAD_SHAPE (59)
SEXT	Outer annular radius (m), ring 60:	5.970E+02	5.970E+02	---	RAD_SHAPE (60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA (49)
SEXT	Ring 50	3.100E-02	3.100E-02	---	FRACA (50)
SEXT	Ring 51	7.423E-02	7.423E-02	---	FRACA (51)
SEXT	Ring 52	8.355E-02	8.355E-02	---	FRACA (52)
SEXT	Ring 53	7.830E-02	7.830E-02	---	FRACA (53)
SEXT	Ring 54	7.368E-02	7.368E-02	---	FRACA (54)
SEXT	Ring 55	6.958E-02	6.958E-02	---	FRACA (55)
SEXT	Ring 56	6.592E-02	6.592E-02	---	FRACA (56)
SEXT	Ring 57	6.262E-02	6.262E-02	---	FRACA (57)
SEXT	Ring 58	5.965E-02	5.965E-02	---	FRACA (58)
SEXT	Ring 59	3.827E-02	3.827E-02	---	FRACA (59)
SEXT	Ring 60	9.120E-03	9.120E-03	---	FRACA (60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	3.746E+02	3.746E+02	---	RAD_SHAPE (61)
SEXT	Outer annular radius (m), ring 62:	4.027E+02	4.027E+02	---	RAD_SHAPE (62)
SEXT	Outer annular radius (m), ring 63:	4.308E+02	4.308E+02	---	RAD_SHAPE (63)
SEXT	Outer annular radius (m), ring 64:	4.590E+02	4.590E+02	---	RAD_SHAPE (64)
SEXT	Outer annular radius (m), ring 65:	4.839E+02	4.839E+02	---	RAD_SHAPE (65)
SEXT	Outer annular radius (m), ring 66:	5.089E+02	5.089E+02	---	RAD_SHAPE (66)

SEXT	Outer annular radius (m), ring 67:	5.339E+02	5.339E+02	---	RAD_SHAPE (67)
SEXT	Outer annular radius (m), ring 68:	5.588E+02	5.588E+02	---	RAD_SHAPE (68)
SEXT	Outer annular radius (m), ring 69:	5.838E+02	5.838E+02	---	RAD_SHAPE (69)
SEXT	Outer annular radius (m), ring 70:	6.029E+02	6.029E+02	---	RAD_SHAPE (70)
SEXT	Outer annular radius (m), ring 71:	6.221E+02	6.221E+02	---	RAD_SHAPE (71)
SEXT	Outer annular radius (m), ring 72:	6.412E+02	6.412E+02	---	RAD_SHAPE (72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	2.112E-02	2.112E-02	---	FRACA (62)
SEXT	Ring 63	5.239E-02	5.239E-02	---	FRACA (63)
SEXT	Ring 64	7.176E-02	7.176E-02	---	FRACA (64)
SEXT	Ring 65	7.725E-02	7.725E-02	---	FRACA (65)
SEXT	Ring 66	7.271E-02	7.271E-02	---	FRACA (66)
SEXT	Ring 67	6.870E-02	6.870E-02	---	FRACA (67)
SEXT	Ring 68	6.514E-02	6.514E-02	---	FRACA (68)
SEXT	Ring 69	6.196E-02	6.196E-02	---	FRACA (69)
SEXT	Ring 70	4.553E-02	4.553E-02	---	FRACA (70)
SEXT	Ring 71	2.220E-02	2.220E-02	---	FRACA (71)
SEXT	Ring 72	6.703E-03	6.703E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL

RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM
RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK(1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK(2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT(1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT(2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT(3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT(4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK(1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK(2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT(1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT(2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT(3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT(4)

Summary of Pathway Selections

Pathway	User Selection
---------	----------------

1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 40
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g	
------------------------------	------------------------------------	--

Area: 44521.00 square meters	U-234	1.485E+01
Thickness: 2.00 meters	U-235	9.550E-01
Cover Depth: 0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.506E-03	1.505E-03	1.503E-03	1.495E-03	1.473E-03	1.400E-03	1.220E-03	8.323E-04
M(t):	6.026E-05	6.021E-05	6.012E-05	5.981E-05	5.892E-05	5.600E-05	4.881E-05	3.329E-05

0Maximum TDOSE(t): 1.506E-03 mrem/yr at t = 0 years

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 0 years

0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	7.60E-08	0	9.35E-07	0	0.00E+00	0	8.08E-09	0	1.21E-10	0	6.02E-10	0	3.11E-12	0	1.02E-06	0
U-235	2.34E-04	16	5.42E-08	0	0.00E+00	0	4.93E-10	0	7.43E-12	0	3.68E-11	0	1.90E-13	0	2.34E-04	16
U-238	1.27E-03	84	7.05E-07	0	0.00E+00	0	6.89E-09	0	1.04E-10	0	5.14E-10	0	2.66E-12	0	1.27E-03	84
Total	1.50E-03	100	1.69E-06	0	0.00E+00	0	1.55E-08	0	2.33E-10	0	1.15E-09	0	5.96E-12	0	1.51E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water

0	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	7.64E-08	0	9.35E-07	0	0.00E+00	0	8.11E-09	0	1.23E-10	0	6.06E-10	0	9.28E-12	0	1.02E-06	0
U-235	2.33E-04	16	5.42E-08	0	0.00E+00	0	4.96E-10	0	7.54E-12	0	3.70E-11	0	5.67E-13	0	2.33E-04	16
U-238	1.27E-03	84	7.04E-07	0	0.00E+00	0	6.92E-09	0	1.05E-10	0	5.17E-10	0	7.92E-12	0	1.27E-03	84
Total	1.50E-03	100	1.69E-06	0	0.00E+00	0	1.55E-08	0	2.35E-10	0	1.16E-09	0	1.78E-11	0	1.51E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

From releases to ground water and to surface water

0	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water
---	--------	------	-------	-------	------	------	------	-------

Radio-Nuclide	Dose		%	Dose		%	Dose		%	Dose		%	Dose		%	Dose		%
U-234	0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0	
U-235	0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0	
U-238	0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0	
Total	0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0		0.00E+00	0	

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																		
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*			
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%		
U-234	7.84E-08	0	9.34E-07	0	0.00E+00	0	8.18E-09	0	1.26E-10	0	6.13E-10	0	2.13E-11	0	1.02E-06	0		
U-235	2.33E-04	16	5.41E-08	0	0.00E+00	0	5.00E-10	0	7.77E-12	0	3.74E-11	0	1.30E-12	0	2.33E-04	16		
U-238	1.27E-03	84	7.03E-07	0	0.00E+00	0	6.98E-09	0	1.07E-10	0	5.23E-10	0	1.82E-11	0	1.27E-03	84		
Total	1.50E-03	100	1.69E-06	0	0.00E+00	0	1.57E-08	0	2.41E-10	0	1.17E-09	0	4.09E-11	0	1.50E-03	100		

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

From releases to ground water and to surface water																		
Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water			
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%		
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0		

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 10 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																		
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*			
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%		
U-234	9.79E-08	0	9.29E-07	0	0.00E+00	0	8.39E-09	0	1.35E-10	0	6.35E-10	0	6.07E-11	0	1.04E-06	0		
U-235	2.32E-04	16	5.41E-08	0	0.00E+00	0	5.14E-10	0	8.55E-12	0	3.88E-11	0	3.72E-12	0	2.32E-04	16		
U-238	1.26E-03	84	6.99E-07	0	0.00E+00	0	7.16E-09	0	1.15E-10	0	5.42E-10	0	5.18E-11	0	1.26E-03	84		

0*Sum of dose from all releases and from primary contamination.

T_{1/2} Limit = 30 days

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESF.ROF

in mrem/yr and as a Percentage of Total Dose at t = 30 years

From releases to ground water and to surface water

0

0

in mrem/yr and as a Percentage of Total Dose at t = 30 years

0

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

0*Sum of dose from all releases and from primary contamination.

$T_{1/2}$ Limit = 30 days

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F Atm. Transport Rem. Alt 1

File : SHIPROCK ALT1 OFFSITE RESF.ROF

in mrem/yr and as a Percentage of Total Dose at $t = 100$ years

From releases to ground water and to surface water

0

[illegible]

Total 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0 0.00E+00 0
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 100 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.01E-06	0	8.76E-07	0	0.00E+00	0	9.54E-09	0	1.93E-10	0	7.56E-10	0	3.15E-10	0	2.90E-06	0
U-235	2.18E-04	16	5.46E-08	0	0.00E+00	0	6.08E-10	0	1.66E-11	0	4.62E-11	0	1.97E-11	0	2.18E-04	16
U-238	1.18E-03	84	6.54E-07	0	0.00E+00	0	8.11E-09	0	1.63E-10	0	6.46E-10	0	2.67E-10	0	1.18E-03	84
Total	1.40E-03	100	1.58E-06	0	0.00E+00	0	1.83E-08	0	3.72E-10	0	1.45E-09	0	6.02E-10	0	1.40E-03	100

0*Sum of dose from all releases and from primary contamination.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water															
	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 300 years

0 Radio- Nuclide		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)														All Pathways*	
		Ground		Inhalation		Radon		Plant		Meat		Milk		Soil			
		Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234		1.55E-05	1	7.70E-07	0	0.00E+00	0	8.97E-09	0	2.04E-10	0	7.08E-10	0	3.69E-10	0	1.63E-05	1
U-235		1.90E-04	16	5.55E-08	0	0.00E+00	0	6.17E-10	0	2.60E-11	0	4.30E-11	0	2.36E-11	0	1.90E-04	16
U-238		1.01E-03	83	5.62E-07	0	0.00E+00	0	7.43E-09	0	1.58E-10	0	5.99E-10	0	3.00E-10	0	1.01E-03	83
Total		1.22E-03	100	1.39E-06	0	0.00E+00	0	1.70E-08	0	3.88E-10	0	1.35E-09	0	6.92E-10	0	1.22E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1000 years
From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	1.17E-04	14	5.05E-07	0	0.00E+00	0	7.39E-09	0	3.15E-10	0	4.89E-10	0	3.72E-10	0	1.17E-04	14
U-235	1.18E-04	14	5.02E-08	0	0.00E+00	0	4.86E-10	0	3.56E-11	0	2.56E-11	0	1.72E-11	0	1.18E-04	14
U-238	5.97E-04	72	3.32E-07	0	0.00E+00	0	4.40E-09	0	9.41E-11	0	3.56E-10	0	1.80E-10	0	5.97E-04	72
Total	8.31E-04	100	8.87E-07	0	0.00E+00	0	1.23E-08	0	4.44E-10	0	8.70E-10	0	5.69E-10	0	8.32E-04	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Parent and Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g)									
			0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03		
U-234	U-234	1.000E+00	6.870E-08	6.865E-08	6.855E-08	6.821E-08	6.724E-08	6.386E-08	5.491E-08	3.228E-08		
U-234	Th-230	1.000E+00	3.820E-12	1.146E-11	2.671E-11	7.992E-11	2.304E-10	7.396E-10	2.054E-09	5.354E-09		
U-234	Ra-226+D	1.000E+00	5.102E-12	3.263E-11	1.696E-10	1.504E-09	1.253E-08	1.306E-07	1.042E-06	7.844E-06		
U-234	Pb-210+D	1.000E+00	1.724E-17	2.214E-16	2.438E-15	6.033E-14	1.265E-12	2.902E-11	3.382E-10	2.960E-09		
U-234	Po-210	1.000E+00	1.585E-19	3.206E-18	5.030E-17	1.630E-15	3.834E-14	9.509E-13	1.179E-11	1.082E-10		
U-234	ΣDSR(j)		6.871E-08	6.870E-08	6.875E-08	6.980E-08	8.000E-08	1.952E-07	1.099E-06	7.885E-06		
OU-234	U-234	1.339E-06	9.199E-14	9.192E-14	9.179E-14	9.134E-14	9.003E-14	8.550E-14	7.352E-14	4.322E-14		
U-234	Th-230	1.339E-06	5.115E-18	1.534E-17	3.577E-17	1.070E-16	3.085E-16	9.903E-16	2.750E-15	7.169E-15		
U-234	Ra-226+D	1.339E-06	6.831E-18	4.369E-17	2.271E-16	2.014E-15	1.678E-14	1.749E-13	1.395E-12	1.050E-11		
U-234	Pb-210+D1	1.339E-06	1.192E-22	1.530E-21	1.685E-20	4.169E-19	8.736E-18	1.999E-16	2.323E-15	2.028E-14		
U-234	ΣDSR(j)		9.200E-14	9.198E-14	9.206E-14	9.346E-14	1.071E-13	2.616E-13	1.473E-12	1.057E-11		
OU-235+D	U-235+D	1.000E+00	2.447E-04	2.445E-04	2.441E-04	2.428E-04	2.392E-04	2.269E-04	1.950E-04	1.149E-04		
U-235+D	Pa-231	1.000E+00	6.681E-10	2.003E-09	4.667E-09	1.393E-08	3.984E-08	1.244E-07	3.191E-07	6.213E-07		

U-235+D	Ac-227+D	1.000E+00	1.090E-10	6.907E-10	3.515E-09	2.893E-08	1.974E-07	1.184E-06	3.849E-06	8.082E-06
U-235	ΣDSR(j)		2.447E-04	2.445E-04	2.441E-04	2.429E-04	2.394E-04	2.282E-04	1.992E-04	1.236E-04
0U-238	U-238	5.450E-07	6.361E-14	6.357E-14	6.347E-14	6.315E-14	6.223E-14	5.907E-14	5.080E-14	2.992E-14
0U-238+D	U-238+D	1.000E+00	9.723E-05	9.715E-05	9.701E-05	9.649E-05	9.505E-05	9.015E-05	7.749E-05	4.565E-05
U-238+D	U-234	1.000E+00	9.697E-14	2.907E-13	6.774E-13	2.022E-12	5.790E-12	1.812E-11	4.661E-11	9.132E-11
U-238+D	Th-230	1.000E+00	4.016E-18	2.568E-17	1.335E-16	1.185E-15	9.885E-15	1.036E-13	8.385E-13	6.623E-12
U-238+D	Ra-226+D	1.000E+00	3.963E-18	5.129E-17	5.725E-16	1.491E-14	3.593E-13	1.230E-11	2.905E-10	7.012E-09
U-238+D	Pb-210+D	1.000E+00	9.944E-24	2.755E-22	6.316E-21	4.564E-19	2.841E-17	2.294E-15	8.637E-14	2.570E-12
U-238+D	Po-210	1.000E+00	1.008E-25	3.589E-24	1.189E-22	1.178E-20	8.458E-19	7.462E-17	2.989E-15	9.304E-14
U-238	ΣDSR(j)		9.723E-05	9.715E-05	9.701E-05	9.649E-05	9.505E-05	9.015E-05	7.750E-05	4.565E-05
0U-238+D	U-238+D	1.339E-06	1.302E-10	1.301E-10	1.299E-10	1.292E-10	1.273E-10	1.207E-10	1.038E-10	6.112E-11
U-238+D	U-234	1.339E-06	1.298E-19	3.893E-19	9.071E-19	2.708E-18	7.753E-18	2.426E-17	6.241E-17	1.223E-16
U-238+D	Th-230	1.339E-06	5.377E-24	3.439E-23	1.788E-22	1.587E-21	1.324E-20	1.387E-19	1.123E-18	8.868E-18
U-238+D	Ra-226+D	1.339E-06	5.339E-24	6.869E-23	7.665E-22	1.996E-20	4.811E-19	1.647E-17	3.890E-16	9.390E-15
U-238+D	Pb-210+D1	1.339E-06	1.105E-28	1.992E-27	4.368E-26	3.154E-24	1.962E-22	1.581E-20	5.935E-19	1.761E-17
U-238	ΣDSR(j)		1.302E-10	1.301E-10	1.299E-10	1.292E-10	1.273E-10	1.207E-10	1.038E-10	6.113E-11

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	3.639E+08	3.639E+08	3.636E+08	3.582E+08	3.125E+08	1.280E+08	2.275E+07	3.171E+06
U-235	1.022E+05	1.023E+05	1.024E+05	1.029E+05	1.044E+05	1.096E+05	1.255E+05	2.023E+05
U-238	2.571E+05	2.573E+05	2.577E+05	2.591E+05	2.630E+05	2.773E+05	3.226E+05	*3.361E+05

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
U-234	1.485E+01	1001	7.891E-06	3.168E+06	6.871E-08	3.639E+08
U-235	9.550E-01	0	2.447E-04	1.022E+05	2.447E-04	1.022E+05
U-238	1.308E+01	0	9.723E-05	2.571E+05	9.723E-05	2.571E+05

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated									
ONuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr						
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02 3.000E+02 1.000E+03
U-234	U-234	1.000E+00		1.020E-06	1.019E-06	1.018E-06	1.013E-06	9.985E-07	9.482E-07 8.154E-07 4.794E-07
U-234	U-234	1.339E-06		1.366E-12	1.365E-12	1.363E-12	1.356E-12	1.337E-12	1.270E-12 1.092E-12 6.419E-13
U-234	U-238	1.000E+00		1.268E-12	3.803E-12	8.861E-12	2.645E-11	7.574E-11	2.370E-10 6.096E-10 1.194E-09
U-234	ΣDOSE(j):			1.020E-06	1.019E-06	1.018E-06	1.013E-06	9.986E-07	9.485E-07 8.160E-07 4.806E-07
0Th-230	U-234	1.000E+00		5.672E-11	1.701E-10	3.967E-10	1.187E-09	3.422E-09	1.098E-08 3.050E-08 7.951E-08
Th-230	U-238	1.000E+00		5.252E-17	3.360E-16	1.747E-15	1.550E-14	1.293E-13	1.355E-12 1.097E-11 8.662E-11
Th-230	ΣDOSE(j):			5.672E-11	1.701E-10	3.967E-10	1.187E-09	3.422E-09	1.098E-08 3.051E-08 7.959E-08
0Ra-226	U-234	1.000E+00		7.576E-11	4.845E-10	2.519E-09	2.234E-08	1.861E-07	1.940E-06 1.547E-05 1.165E-04
Ra-226	U-238	1.000E+00		5.184E-17	6.708E-16	7.488E-15	1.950E-13	4.700E-12	1.609E-10 3.800E-09 9.172E-08
Ra-226	ΣDOSE(j):			7.576E-11	4.845E-10	2.519E-09	2.234E-08	1.861E-07	1.940E-06 1.547E-05 1.166E-04
0Pb-210	U-234	1.000E+00		2.560E-16	3.287E-15	3.620E-14	8.959E-13	1.879E-11	4.310E-10 5.022E-09 4.396E-08
Pb-210	U-238	1.000E+00		1.301E-22	3.604E-21	8.261E-20	5.970E-18	3.717E-16	3.001E-14 1.130E-12 3.361E-11
Pb-210	ΣDOSE(j):			2.560E-16	3.287E-15	3.620E-14	8.959E-13	1.879E-11	4.310E-10 5.023E-09 4.400E-08
0Po-210	U-234	1.000E+00		2.354E-18	4.761E-17	7.469E-16	2.420E-14	5.694E-13	1.412E-11 1.750E-10 1.607E-09
Po-210	U-238	1.000E+00		1.319E-24	4.694E-23	1.555E-21	1.541E-19	1.106E-17	9.761E-16 3.909E-14 1.217E-12
Po-210	ΣDOSE(j):			2.354E-18	4.761E-17	7.469E-16	2.420E-14	5.694E-13	1.412E-11 1.751E-10 1.608E-09
0Th-230	U-234	1.339E-06		7.595E-17	2.278E-16	5.311E-16	1.589E-15	4.582E-15	1.471E-14 4.084E-14 1.065E-13
Th-230	U-238	1.339E-06		7.033E-23	4.498E-22	2.339E-21	2.076E-20	1.731E-19	1.815E-18 1.469E-17 1.160E-16
Th-230	ΣDOSE(j):			7.595E-17	2.278E-16	5.311E-16	1.589E-15	4.582E-15	1.471E-14 4.085E-14 1.066E-13
0Ra-226	U-234	1.339E-06		1.014E-16	6.488E-16	3.373E-15	2.991E-14	2.491E-13	2.597E-12 2.071E-11 1.560E-10
Ra-226	U-238	1.339E-06		6.984E-23	8.984E-22	1.003E-20	2.611E-19	6.293E-18	2.154E-16 5.088E-15 1.228E-13
Ra-226	ΣDOSE(j):			1.014E-16	6.488E-16	3.373E-15	2.991E-14	2.491E-13	2.598E-12 2.072E-11 1.561E-10
0Pb-210	U-234	1.339E-06		1.770E-21	2.273E-20	2.502E-19	6.191E-18	1.297E-16	2.969E-15 3.449E-14 3.012E-13
Pb-210	U-238	1.339E-06		1.445E-27	2.605E-26	5.713E-25	4.125E-23	2.566E-21	2.068E-19 7.763E-18 2.304E-16
Pb-210	ΣDOSE(j):			1.770E-21	2.273E-20	2.502E-19	6.191E-18	1.297E-16	2.969E-15 3.450E-14 3.014E-13
0U-235	U-235	1.000E+00		2.337E-04	2.335E-04	2.331E-04	2.319E-04	2.284E-04	2.167E-04 1.862E-04 1.097E-04
0Pa-231	U-235	1.000E+00		6.380E-10	1.913E-09	4.457E-09	1.330E-08	3.804E-08	1.188E-07 3.048E-07 5.933E-07
0Ac-227	U-235	1.000E+00		1.041E-10	6.596E-10	3.357E-09	2.763E-08	1.885E-07	1.130E-06 3.676E-06 7.718E-06
0U-238	U-238	5.450E-07		8.321E-13	8.315E-13	8.303E-13	8.260E-13	8.140E-13	7.726E-13 6.645E-13 3.914E-13
U-238	U-238	1.000E+00		1.272E-03	1.271E-03	1.269E-03	1.262E-03	1.243E-03	1.179E-03 1.014E-03 5.971E-04
U-238	ΣDOSE(j):			1.272E-03	1.271E-03	1.269E-03	1.262E-03	1.243E-03	1.179E-03 1.014E-03 5.971E-04
0U-238	U-238	1.339E-06		1.703E-09	1.702E-09	1.699E-09	1.690E-09	1.665E-09	1.579E-09 1.357E-09 7.995E-10
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 52									
Parent Dose Report									
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1									
File : SHIPROCK_ALT1_OFFSITE RESF.ROF									

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Thread Fraction Indicated									
ONuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr						
			t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02 3.000E+02 1.000E+03
U-234	U-238	1.339E-06		1.698E-18	5.092E-18	1.186E-17	3.542E-17	1.014E-16	3.174E-16 8.163E-16 1.599E-15

THF(i) is the thread fraction of the parent nuclide.
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 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Individual Nuclide Soil Concentration Parent Nuclide and Thread Fraction Indicated										
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00	1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.376E+01	1.183E+01	6.952E+00
U-234	U-234	1.339E-06	1.988E-05	1.987E-05	1.984E-05	1.973E-05	1.944E-05	1.843E-05	1.584E-05	9.309E-06
U-234	U-238	1.000E+00	0.000E+00	3.690E-05	1.105E-04	3.665E-04	1.083E-03	3.424E-03	8.827E-03	1.731E-02
U-234	ΣS(j):		1.485E+01	1.484E+01	1.482E+01	1.474E+01	1.452E+01	1.377E+01	1.184E+01	6.970E+00
0Th-230	U-234	1.000E+00	0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.658E-02	9.516E-02
Th-230	U-238	1.000E+00	0.000E+00	1.715E-10	1.531E-09	1.690E-08	1.505E-07	1.614E-06	1.314E-05	1.038E-04
Th-230	ΣS(j):		0.000E+00	1.365E-04	4.092E-04	1.360E-03	4.050E-03	1.314E-02	3.659E-02	9.527E-02
0Ra-226	U-234	1.000E+00	0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03	1.691E-02
Ra-226	U-238	1.000E+00	0.000E+00	2.540E-14	6.675E-13	2.441E-11	6.499E-10	2.304E-08	5.496E-07	1.331E-05
Ra-226	ΣS(j):		0.000E+00	2.987E-08	2.666E-07	2.942E-06	2.616E-05	2.792E-04	2.241E-03	1.693E-02
0Pb-210	U-234	1.000E+00	0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.822E-03	1.594E-02
Pb-210	U-238	1.000E+00	0.000E+00	2.104E-16	1.566E-14	1.797E-12	1.278E-10	1.078E-08	4.094E-07	1.219E-05
Pb-210	ΣS(j):		0.000E+00	3.162E-10	8.185E-09	2.842E-07	6.574E-06	1.556E-04	1.823E-03	1.595E-02
0Po-210	U-234	1.000E+00	0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03	1.590E-02
Po-210	U-238	1.000E+00	0.000E+00	6.291E-17	8.792E-15	1.464E-12	1.191E-10	1.055E-08	4.063E-07	1.215E-05
Po-210	ΣS(j):		0.000E+00	1.073E-10	5.070E-09	2.429E-07	6.239E-06	1.532E-04	1.812E-03	1.591E-02
0Th-230	U-234	1.339E-06	0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.422E-09	1.760E-08	4.898E-08	1.274E-07
Th-230	U-238	1.339E-06	0.000E+00	2.296E-16	2.049E-15	2.263E-14	2.015E-13	2.161E-12	1.759E-11	1.390E-10
Th-230	ΣS(j):		0.000E+00	1.828E-10	5.479E-10	1.821E-09	5.423E-09	1.760E-08	4.900E-08	1.276E-07
0Ra-226	U-234	1.339E-06	0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.000E-09	2.265E-08
Ra-226	U-238	1.339E-06	0.000E+00	3.411E-20	8.938E-19	3.269E-17	8.702E-16	3.085E-14	7.359E-13	1.783E-11
Ra-226	ΣS(j):		0.000E+00	4.000E-14	3.569E-13	3.940E-12	3.503E-11	3.738E-10	3.001E-09	2.267E-08
0Pb-210	U-234	1.339E-06	0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09	2.135E-08
Pb-210	U-238	1.339E-06	0.000E+00	3.417E-22	2.096E-20	2.406E-18	1.711E-16	1.443E-14	5.482E-13	1.632E-11
Pb-210	ΣS(j):		0.000E+00	4.234E-16	1.096E-14	3.805E-13	8.803E-12	2.083E-10	2.440E-09	2.136E-08
0U-235	U-235	1.000E+00	9.550E-01	9.543E-01	9.528E-01	9.478E-01	9.336E-01	8.855E-01	7.612E-01	4.484E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.019E-05	6.048E-05	2.005E-04	5.924E-04	1.871E-03	4.816E-03	9.387E-03
0Ac-227	U-235	1.000E+00	0.000E+00	3.211E-07	2.804E-06	2.870E-05	2.088E-04	1.280E-03	4.183E-03	8.794E-03
0U-238	U-238	5.450E-07	7.129E-06	7.123E-06	7.112E-06	7.075E-06	6.969E-06	6.609E-06	5.682E-06	3.347E-06
U-238	U-238	1.000E+00	1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01	6.141E+00
U-238	ΣS(j):		1.308E+01	1.307E+01	1.305E+01	1.298E+01	1.279E+01	1.213E+01	1.043E+01	6.141E+00
0U-238	U-238	1.339E-06	1.751E-05	1.750E-05	1.747E-05	1.738E-05	1.712E-05	1.624E-05	1.396E-05	8.223E-06

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 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-238	1.339E-06		0.000E+00	4.941E-11	1.480E-10	4.908E-10	1.450E-09	4.584E-09	1.182E-08	2.318E-08

THF(i) is the thread fraction of the parent nuclide.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Run Time Information

ResOCalc.EXE execution began at 13:15 on 03/28/2023

ResOCalc.EXE execution ended at 13:16 on 03/28/2023

ResOCalc.EXE execution time 21.766 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years	2
Time = 1.000E+00 years	3
Time = 3.000E+00 years	4
Time = 1.000E+01 years	5
Time = 3.000E+01 years	6
Time = 1.000E+02 years	7
Time = 3.000E+02 years	8
Time = 1.000E+03 years	9

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-10	1.4E-13	0.0E+00	5.7E-16	1.8E-17	1.4E-18	3.8E-19	1.0E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-10	1.6E-11	0.0E+00	5.4E-14	1.1E-14	4.9E-17	3.1E-17	6.4E-10
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-16	3.6E-18	0.0E+00	7.2E-19	2.5E-20	2.8E-20	5.8E-22	2.6E-16
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-18	8.1E-19	0.0E+00	3.6E-19	5.4E-20	1.6E-20	3.4E-22	2.4E-18
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-11	7.0E-16	0.0E+00	3.6E-17	1.3E-18	4.3E-18	2.3E-20	7.6E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-11	4.6E-11	0.0E+00	1.6E-13	8.5E-16	1.5E-16	9.3E-17	5.7E-11
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-08	9.4E-07	0.0E+00	8.1E-09	1.2E-10	6.0E-10	3.1E-12	1.0E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	5.4E-08	0.0E+00	4.9E-10	7.4E-12	3.7E-11	1.9E-13	2.3E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	7.0E-07	0.0E+00	6.9E-09	1.0E-10	5.1E-10	2.7E-12	1.3E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	1.7E-06	0.0E+00	1.5E-08	2.3E-10	1.2E-09	6.0E-12	1.5E-03

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.6E-10	8.8E-13	0.0E+00	3.6E-15	5.8E-17	9.0E-18	4.6E-18	6.6E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-09	4.7E-11	0.0E+00	1.6E-13	3.5E-14	1.2E-16	1.9E-16	1.9E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-15	4.6E-17	0.0E+00	9.6E-18	3.5E-19	3.5E-19	1.3E-20	3.3E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-17	1.6E-17	0.0E+00	7.5E-18	1.4E-18	3.2E-19	1.1E-20	4.8E-17
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-10	4.5E-15	0.0E+00	2.4E-16	9.7E-18	2.8E-17	2.8E-19	4.8E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-11	1.4E-10	0.0E+00	4.8E-13	2.3E-15	3.7E-16	5.9E-16	1.7E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-08	9.3E-07	0.0E+00	8.1E-09	1.2E-10	6.1E-10	9.3E-12	1.0E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	5.4E-08	0.0E+00	5.0E-10	7.5E-12	3.7E-11	5.7E-13	2.3E-04

U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	7.0E-07	0.0E+00	6.9E-09	1.0E-10	5.2E-10	7.9E-12	1.3E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	1.7E-06	0.0E+00	1.6E-08	2.4E-10	1.2E-09	1.8E-11	1.5E-03

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 4
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 3 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-09	4.5E-12	0.0E+00	1.9E-14	1.5E-16	4.6E-17	4.9E-17	3.4E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-09	1.1E-10	0.0E+00	4.0E-13	8.7E-14	2.6E-16	9.9E-16	4.5E-09
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-14	5.1E-16	0.0E+00	1.1E-16	4.0E-18	4.0E-18	2.9E-19	3.6E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.5E-16	2.5E-16	0.0E+00	1.2E-16	2.4E-17	5.0E-18	3.2E-19	7.5E-16
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.5E-09	2.3E-14	0.0E+00	1.4E-15	5.8E-17	1.5E-16	3.1E-18	2.5E-09
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-11	3.2E-10	0.0E+00	1.1E-12	5.3E-15	7.8E-16	3.1E-15	4.0E-10
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.6E-08	9.3E-07	0.0E+00	8.2E-09	1.3E-10	6.1E-10	2.1E-11	1.0E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	5.4E-08	0.0E+00	5.0E-10	7.7E-12	3.7E-11	1.3E-12	2.3E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	7.0E-07	0.0E+00	7.0E-09	1.1E-10	5.2E-10	1.8E-11	1.3E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	1.7E-06	0.0E+00	1.6E-08	2.4E-10	1.2E-09	4.1E-11	1.5E-03

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 5
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 10 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-08	3.7E-11	0.0E+00	1.6E-13	6.1E-16	4.0E-16	1.1E-15	2.8E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-08	3.2E-10	0.0E+00	1.3E-12	3.0E-13	7.8E-16	8.4E-15	1.3E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.8E-13	1.3E-14	0.0E+00	3.0E-15	1.1E-16	1.0E-16	2.0E-17	9.0E-13
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-14	8.1E-15	0.0E+00	3.9E-15	8.5E-16	1.7E-16	2.9E-17	2.4E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-08	2.1E-13	0.0E+00	1.8E-14	7.1E-16	1.6E-15	7.9E-17	2.2E-08
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-10	9.7E-10	0.0E+00	3.4E-12	1.7E-14	2.3E-15	2.7E-14	1.2E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-08	9.3E-07	0.0E+00	8.4E-09	1.4E-10	6.3E-10	6.1E-11	1.0E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	5.4E-08	0.0E+00	5.1E-10	8.3E-12	3.9E-11	3.7E-12	2.3E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	7.0E-07	0.0E+00	7.2E-09	1.2E-10	5.4E-10	5.2E-11	1.3E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	1.7E-06	0.0E+00	1.6E-08	2.6E-10	1.2E-09	1.2E-10	1.5E-03

0*Sum of dose from all releases and from primary contamination.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 6
 Progeny Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 30 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-07	2.5E-10	0.0E+00	1.1E-12	2.9E-15	2.9E-15	1.7E-14	1.9E-07

Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-08	9.3E-10	0.0E+00	4.7E-12	1.1E-12	2.5E-15	6.1E-14	3.8E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.8E-11	2.7E-13	0.0E+00	8.2E-14	3.1E-15	2.6E-15	1.1E-15	1.9E-11
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-13	1.9E-13	0.0E+00	9.4E-14	2.4E-14	4.3E-15	1.8E-15	5.7E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-07	1.7E-12	0.0E+00	2.7E-13	9.9E-15	1.8E-14	1.8E-15	1.9E-07
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-10	2.8E-09	0.0E+00	1.0E-11	5.6E-14	7.1E-15	2.1E-13	3.4E-09
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-08	9.1E-07	0.0E+00	8.9E-09	1.6E-10	6.8E-10	1.5E-10	1.0E-06
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	5.3E-08	0.0E+00	9.6E-10	9.6E-12	4.2E-11	9.3E-12	2.3E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	6.9E-07	0.0E+00	7.6E-09	1.3E-10	5.8E-10	1.3E-10	1.2E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.5E-03 1.7E-06 0.0E+00 1.7E-08 3.0E-10 1.3E-09 2.9E-10 1.5E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 7

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 100 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-06	1.5E-09	0.0E+00	7.4E-12	1.6E-14	1.9E-14	2.0E-13	1.1E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-07	2.9E-09	0.0E+00	2.1E-11	4.9E-12	9.8E-15	4.1E-13	1.2E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.2E-10	6.1E-12	0.0E+00	3.0E-12	1.1E-13	8.0E-14	6.7E-14	4.3E-10
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-12	4.4E-12	0.0E+00	2.5E-12	8.1E-13	1.2E-13	1.1E-13	1.4E-11
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-06	1.8E-11	0.0E+00	5.9E-12	2.1E-13	3.3E-13	4.9E-14	1.9E-06
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.0E-09	9.0E-09	0.0E+00	3.6E-11	2.6E-13	2.9E-14	2.0E-12	1.1E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-08	8.7E-07	0.0E+00	9.5E-09	1.9E-10	7.6E-10	3.1E-10	9.5E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-04	5.0E-08	0.0E+00	5.8E-10	1.2E-11	4.6E-11	1.9E-11	2.2E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	6.5E-07	0.0E+00	8.1E-09	1.6E-10	6.5E-10	2.7E-10	1.2E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.4E-03 1.6E-06 0.0E+00 1.8E-08 3.7E-10 1.4E-09 6.0E-10 1.4E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 8

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr at t = 300 years

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-06	4.9E-09	0.0E+00	2.5E-11	5.2E-14	6.6E-14	7.7E-13	3.7E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-07	7.4E-09	0.0E+00	6.1E-11	1.5E-11	2.8E-14	1.4E-12	3.0E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-09	7.0E-11	0.0E+00	5.1E-11	2.0E-12	1.3E-12	1.4E-12	5.0E-09
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-11	5.2E-11	0.0E+00	3.4E-11	1.3E-11	1.8E-12	2.4E-12	1.8E-10
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-05	1.4E-10	0.0E+00	8.1E-11	2.9E-12	4.1E-12	7.2E-13	1.5E-05
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.4E-09	2.5E-08	0.0E+00	1.2E-10	1.3E-12	1.2E-13	1.4E-11	3.1E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.1E-08	7.5E-07	0.0E+00	8.7E-09	1.8E-10	7.0E-10	3.5E-10	8.2E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-04	4.3E-08	0.0E+00	5.3E-10	1.1E-11	4.3E-11	2.1E-11	1.9E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-03	5.6E-07	0.0E+00	7.4E-09	1.6E-10	6.0E-10	3.0E-10	1.0E-03

Total 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 0.0E+00 1.2E-03 1.4E-06 0.0E+00 1.7E-08 3.9E-10 1.4E-09 6.9E-10 1.2E-03

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 9

Progeny Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

0 Nuc.	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-06	1.0E-08	0.0E+00	5.2E-11	1.1E-13	1.4E-13	1.6E-12	7.7E-06
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-07	1.4E-08	0.0E+00	1.2E-10	2.9E-11	5.4E-14	2.7E-12	5.9E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-08	6.1E-10	0.0E+00	5.8E-10	2.3E-11	1.4E-11	1.8E-11	4.4E-08
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.3E-10	4.6E-10	0.0E+00	3.3E-10	1.4E-10	1.8E-11	3.0E-11	1.6E-09
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-04	1.1E-09	0.0E+00	8.7E-10	3.0E-11	4.2E-11	8.0E-12	1.2E-04
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-08	6.5E-08	0.0E+00	5.0E-10	7.7E-12	6.3E-13	1.1E-10	8.0E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-08	4.4E-07	0.0E+00	5.1E-09	1.1E-10	4.2E-10	2.1E-10	4.8E-07
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-04	2.5E-08	0.0E+00	3.1E-10	6.7E-12	2.5E-11	1.3E-11	1.1E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-04	3.3E-07	0.0E+00	4.4E-09	9.4E-11	3.5E-10	1.8E-10	6.0E-04
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.3E-04	8.9E-07	0.0E+00	1.2E-08	4.4E-10	8.7E-10	5.7E-10	8.3E-04

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

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Excess Cancer Risks at	
Time = 0.000E+00	4
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Time = 3.000E+01	12
Time = 1.000E+02	14
Time = 3.000E+02	16
Time = 1.000E+03	18

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)

DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)
DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

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T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D		3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230		9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234		7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D		7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238		6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D		8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):				
DCSF	Ac-227+D		6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231		2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D		1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1		1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210		2.25E-09	2.25E-09	SLPF(5,5)

DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	8.18E-17	0	4.58E-20	0	2.31E-22	0	7.18E-24	0	5.71E-25	0	1.55E-25	0	8.18E-17	0
Pa-231	4.93E-16	0	1.39E-18	0	6.84E-21	0	1.39E-21	0	6.30E-24	0	3.89E-24	0	4.94E-16	0
Pb-210	1.27E-22	0	2.78E-24	0	3.34E-25	0	1.16E-26	0	1.27E-26	0	2.67E-28	0	1.30E-22	0

Po-210	8.89E-25	0	7.41E-25	0	1.82E-25	0	2.73E-26	0	7.89E-27	0	1.70E-28	0	1.85E-24	0
Ra-226	6.08E-17	0	5.63E-22	0	1.78E-23	0	6.69E-25	0	2.12E-24	0	1.14E-26	0	6.08E-17	0
Th-230	7.71E-18	0	4.21E-18	0	2.41E-20	0	1.28E-22	0	2.24E-23	0	1.39E-23	0	1.19E-17	0
U-234	5.57E-14	0	7.48E-13	0	4.21E-15	0	6.33E-17	0	3.14E-16	0	1.62E-18	0	8.08E-13	0
U-235	1.84E-10	17	4.32E-14	0	2.77E-16	0	4.16E-18	0	2.06E-17	0	1.07E-19	0	1.84E-10	17
U-238	9.26E-10	83	5.61E-13	0	4.68E-15	0	7.04E-17	0	3.49E-16	0	1.80E-18	0	9.26E-10	83
<hr/>														
Total	1.11E-09	100	1.35E-12	0	9.16E-15	0	1.38E-16	0	6.83E-16	0	3.53E-18	0	1.11E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
<hr/>									
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.57E-14	0	7.48E-13	0	0.00E+00	0	4.21E-15	0	6.33E-17	0	3.14E-16	0	1.62E-18	0	8.08E-13	0

U-235	1.84E-10	17	4.33E-14	0	0.00E+00	0	2.77E-16	0	4.16E-18	0	2.06E-17	0	1.07E-19	0	1.84E-10	17
U-238	9.26E-10	83	5.61E-13	0	0.00E+00	0	4.68E-15	0	7.04E-17	0	3.49E-16	0	1.80E-18	0	9.26E-10	83
Total	1.11E-09	100	1.35E-12	0	0.00E+00	0	9.16E-15	0	1.38E-16	0	6.83E-16	0	3.53E-18	0	1.11E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0
0 Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0
0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	5.18E-16	0	2.90E-19	0	1.47E-21	0	2.37E-23	0	3.65E-24	0	1.87E-24	0	5.18E-16	0
Pa-231	1.48E-15	0	4.18E-18	0	2.09E-20	0	4.45E-21	0	1.55E-23	0	2.47E-23	0	1.48E-15	0
Pb-210	1.63E-21	0	3.57E-23	0	4.42E-24	0	1.60E-25	0	1.63E-25	0	5.94E-27	0	1.67E-21	0
Po-210	1.78E-23	0	1.48E-23	0	3.78E-24	0	7.04E-25	0	1.60E-25	0	5.40E-27	0	3.72E-23	0
Ra-226	3.89E-16	0	3.60E-21	0	1.21E-22	0	4.84E-24	0	1.39E-23	0	1.41E-25	0	3.89E-16	0
Th-230	2.31E-17	0	1.26E-17	0	7.25E-20	0	3.52E-22	0	5.51E-23	0	8.88E-23	0	3.58E-17	0
U-234	5.56E-14	0	7.47E-13	0	4.22E-15	0	6.40E-17	0	3.16E-16	0	4.84E-18	0	8.08E-13	0
U-235	1.84E-10	17	4.32E-14	0	2.78E-16	0	4.21E-18	0	2.07E-17	0	3.18E-19	0	1.84E-10	17
U-238	9.25E-10	83	5.60E-13	0	4.70E-15	0	7.12E-17	0	3.51E-16	0	5.38E-18	0	9.26E-10	83
Total	1.11E-09	100	1.35E-12	0	9.20E-15	0	1.39E-16	0	6.87E-16	0	1.05E-17	0	1.11E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.60E-14	0	7.47E-13	0	0.00E+00	0	4.22E-15	0	6.40E-17	0	3.16E-16	0	4.84E-18	0	8.08E-13	0
U-235	1.84E-10	17	4.32E-14	0	0.00E+00	0	2.78E-16	0	4.21E-18	0	2.07E-17	0	3.18E-19	0	1.84E-10	17
U-238	9.25E-10	83	5.60E-13	0	0.00E+00	0	4.70E-15	0	7.12E-17	0	3.51E-16	0	5.38E-18	0	9.26E-10	83
Total	1.11E-09	100	1.35E-12	0	0.00E+00	0	9.20E-15	0	1.39E-16	0	6.87E-16	0	1.05E-17	0	1.11E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 3 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.64E-15	0	1.48E-18	0	7.55E-21	0	6.22E-23	0	1.88E-23	0	1.98E-23	0	2.64E-15	0
Pa-231	3.44E-15	0	9.74E-18	0	5.04E-20	0	1.10E-20	0	3.32E-23	0	1.27E-22	0	3.45E-15	0
Pb-210	1.80E-20	0	3.93E-22	0	5.05E-23	0	1.83E-24	0	1.82E-24	0	1.31E-25	0	1.84E-20	0
Po-210	2.77E-22	0	2.31E-22	0	5.96E-23	0	1.20E-23	0	2.53E-24	0	1.63E-25	0	5.83E-22	0
Ra-226	2.02E-15	0	1.87E-20	0	7.14E-22	0	2.89E-23	0	7.61E-23	0	1.54E-24	0	2.02E-15	0
Th-230	5.39E-17	0	2.95E-17	0	1.70E-19	0	8.00E-22	0	1.17E-22	0	4.60E-22	0	8.35E-17	0
U-234	5.55E-14	0	7.46E-13	0	4.26E-15	0	6.55E-17	0	3.19E-16	0	1.11E-17	0	8.07E-13	0
U-235	1.83E-10	17	4.32E-14	0	2.80E-16	0	4.31E-18	0	2.10E-17	0	7.31E-19	0	1.83E-10	17
U-238	9.24E-10	83	5.59E-13	0	4.74E-15	0	7.29E-17	0	3.55E-16	0	1.24E-17	0	9.24E-10	83
Total	1.11E-09	100	1.35E-12	0	9.28E-15	0	1.43E-16	0	6.95E-16	0	2.42E-17	0	1.11E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t = 3 years								
Radionuclides								
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 3 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.76E-14	0	7.46E-13	0	0.00E+00	0	4.26E-15	0	6.55E-17	0	3.19E-16	0	1.11E-17	0	8.09E-13	0
U-235	1.83E-10	17	4.32E-14	0	0.00E+00	0	2.80E-16	0	4.32E-18	0	2.10E-17	0	7.31E-19	0	1.83E-10	17
U-238	9.24E-10	83	5.59E-13	0	0.00E+00	0	4.74E-15	0	7.29E-17	0	3.55E-16	0	1.24E-17	0	9.24E-10	83
Total	1.11E-09	100	1.35E-12	0	0.00E+00	0	9.28E-15	0	1.43E-16	0	6.95E-16	0	2.42E-17	0	1.11E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years
From releases to ground water and to surface water

0 Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0 From releases to ground water and to surface water

0 Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 10 years

0	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil	All Pathways***
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**CNRSI(i,p,t) includes contribution from progeny radionuclides

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 12

Title : Shiprock GW Evap. Pond Offsite Res. Location F Atm. Transport Rem. Alt 1

and Fraction of Total Risk at $t = 30$ years

[illegible]

Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
<hr/>														
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.48E-13	0	8.30E-17	0	4.62E-19	0	1.17E-21	0	1.18E-21	0	7.07E-21	0	1.48E-13	0
Pa-231	2.94E-14	0	8.31E-17	0	6.04E-19	0	1.39E-19	0	3.21E-22	0	7.77E-21	0	2.95E-14	0
Pb-210	9.32E-18	0	2.04E-19	0	3.78E-20	0	1.42E-21	0	1.18E-21	0	5.17E-22	0	9.57E-18	0
Po-210	2.06E-19	0	1.72E-19	0	4.75E-20	0	1.20E-20	0	2.14E-21	0	9.02E-22	0	4.40E-19	0
Ra-226	1.49E-13	0	1.38E-18	0	1.32E-19	0	4.92E-21	0	9.07E-21	0	8.78E-22	0	1.49E-13	0
Th-230	4.65E-16	0	2.54E-16	0	1.54E-18	0	8.47E-21	0	1.06E-21	0	3.22E-20	0	7.21E-16	0
U-234	5.44E-14	0	7.31E-13	0	4.62E-15	0	8.15E-17	0	3.56E-16	0	7.92E-17	0	7.91E-13	0
U-235	1.80E-10	17	4.23E-14	0	3.03E-16	0	5.36E-18	0	2.34E-17	0	5.20E-18	0	1.80E-10	17
U-238	9.05E-10	83	5.48E-13	0	5.13E-15	0	9.07E-17	0	3.96E-16	0	8.80E-17	0	9.05E-10	83
<hr/>														
Total	1.08E-09	100	1.32E-12	0	1.01E-14	0	1.78E-16	0	7.76E-16	0	1.72E-16	0	1.09E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 30 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
<hr/>								
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

0

From releases to ground water and to surface water

0

Ground Fish Radon Plant Meat Milk Soil Water

Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 30 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	2.04E-13	0	7.31E-13	0	0.00E+00	0	4.62E-15	0	8.16E-17	0	3.56E-16	0	7.92E-17	0	9.41E-13	0
U-235	1.80E-10	17	4.24E-14	0	0.00E+00	0	3.05E-16	0	5.50E-18	0	2.34E-17	0	5.22E-18	0	1.80E-10	17
U-238	9.05E-10	83	5.48E-13	0	0.00E+00	0	5.13E-15	0	9.07E-17	0	3.96E-16	0	8.80E-17	0	9.05E-10	83
Total	1.08E-09	100	1.32E-12	0	0.00E+00	0	1.01E-14	0	1.78E-16	0	7.76E-16	0	1.72E-16	0	1.09E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 14

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

From releases to ground water and to surface water														
Radio-Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Radio-Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	8.88E-13	0	4.97E-16	0	3.02E-18	0	6.53E-21	0	7.90E-21	0	8.02E-20	0	8.88E-13	0
Pa-231	9.17E-14	0	2.60E-16	0	2.62E-18	0	6.22E-19	0	1.24E-21	0	5.27E-20	0	9.20E-14	0
Pb-210	2.13E-16	0	4.66E-18	0	1.37E-18	0	5.27E-20	0	3.70E-20	0	3.11E-20	0	2.19E-16	0
Po-210	4.89E-18	0	4.07E-18	0	1.27E-18	0	4.06E-19	0	6.21E-20	0	5.61E-20	0	1.08E-17	0
Ra-226	1.56E-12	0	1.44E-17	0	2.93E-18	0	1.05E-19	0	1.62E-19	0	2.41E-20	0	1.56E-12	0
Th-230	1.49E-15	0	8.15E-16	0	5.44E-18	0	3.97E-20	0	4.30E-21	0	3.03E-19	0	2.31E-15	0
U-234	5.16E-14	0	6.94E-13	0	4.95E-15	0	9.96E-17	0	3.94E-16	0	1.63E-16	0	7.51E-13	0
U-235	1.70E-10	17	4.01E-14	0	3.25E-16	0	6.55E-18	0	2.59E-17	0	1.07E-17	0	1.70E-10	17
U-238	8.58E-10	83	5.20E-13	0	5.50E-15	0	1.11E-16	0	4.38E-16	0	1.81E-16	0	8.59E-10	83
Total	1.03E-09	100	1.26E-12	0	1.08E-14	0	2.18E-16	0	8.58E-16	0	3.56E-16	0	1.03E-09	100

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 100 years
Radionuclides

0

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

[illegible]

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 100 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.61E-12	0	6.94E-13	0	0.00E+00	0	4.96E-15	0	1.00E-16	0	3.94E-16	0	1.63E-16	0
U-235	1.71E-10	17	4.09E-14	0	0.00E+00	0	3.31E-16	0	7.18E-18	0	2.59E-17	0	1.08E-17	0
U-238	8.58E-10	83	5.20E-13	0	0.00E+00	0	5.50E-15	0	1.11E-16	0	4.38E-16	0	1.81E-16	0
Total	1.03E-09	100	1.26E-12	0	0.00E+00	0	1.08E-14	0	2.18E-16	0	8.58E-16	0	3.56E-16	0

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 300 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.89E-12	0	1.62E-15	0	1.02E-17	0	2.13E-20	0	2.68E-20	0	3.15E-19	0	2.89E-12	0

U-234	1.25E-11	1	5.98E-13	0	0.00E+00	0	4.62E-15	0	1.05E-16	0	3.69E-16	0	1.87E-16	0	1.31E-11	1
U-235	1.50E-10	17	3.68E-14	0	0.00E+00	0	3.16E-16	0	8.22E-18	0	2.41E-17	0	1.25E-17	0	1.50E-10	17
U-238	7.38E-10	82	4.47E-13	0	0.00E+00	0	5.04E-15	0	1.07E-16	0	4.07E-16	0	2.03E-16	0	7.38E-10	82
Total	9.00E-10	100	1.08E-12	0	0.00E+00	0	9.98E-15	0	2.21E-16	0	8.00E-16	0	4.03E-16	0	9.01E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1

File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

0	From releases to ground water and to surface water													
0	Ground		Fish		Plant		Meat		Milk		Soil		Water	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1000 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
0	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Nuclide														
Ac-227	6.06E-12	1	3.40E-15	0	2.13E-17	0	4.33E-20	0	5.63E-20	0	6.59E-19	0	6.07E-12	1
Pa-231	4.58E-13	0	1.30E-15	0	1.53E-17	0	3.66E-18	0	6.94E-21	0	3.48E-19	0	4.59E-13	0
Pb-210	2.16E-14	0	4.72E-16	0	2.65E-16	0	1.05E-17	0	6.32E-18	0	8.14E-18	0	2.24E-14	0
Po-210	5.01E-16	0	4.18E-16	0	1.67E-16	0	7.28E-17	0	9.30E-18	0	1.49E-17	0	1.18E-15	0
Ra-226	9.36E-11	15	8.66E-16	0	4.30E-16	0	1.51E-17	0	2.07E-17	0	3.96E-18	0	9.36E-11	15
Th-230	1.08E-14	0	5.88E-15	0	7.48E-17	0	1.15E-18	0	9.43E-20	0	1.62E-17	0	1.67E-14	0
U-234	2.61E-14	0	3.51E-13	0	2.68E-15	0	5.72E-17	0	2.16E-16	0	1.09E-16	0	3.80E-13	0
U-235	8.63E-11	14	2.03E-14	0	1.76E-16	0	3.76E-18	0	1.42E-17	0	7.18E-18	0	8.63E-11	14
U-238	4.35E-10	70	2.63E-13	0	2.98E-15	0	6.36E-17	0	2.41E-16	0	1.21E-16	0	4.35E-10	70

Total	6.21E-10	100	6.47E-13	0	6.80E-15	0	2.28E-16	0	5.08E-16	0	2.82E-16	0	6.22E-10	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/28/2023 13:15 Page 19
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alt 1
 File : SHIPROCK_ALT1_OFFSITE RESF.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 1000 years
 Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1000 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	9.36E-11	15	3.58E-13	0	0.00E+00	0	3.61E-15	0	1.56E-16	0	2.52E-16	0	1.52E-16	0	9.40E-11	15
U-235	9.28E-11	15	2.50E-14	0	0.00E+00	0	2.13E-16	0	7.46E-18	0	1.43E-17	0	8.19E-18	0	9.28E-11	15
U-238	4.35E-10	70	2.64E-13	0	0.00E+00	0	2.99E-15	0	6.38E-17	0	2.41E-16	0	1.22E-16	0	4.35E-10	70
Total	6.21E-10	100	6.47E-13	0	0.00E+00	0	6.80E-15	0	2.28E-16	0	5.08E-16	0	2.82E-16	0	6.22E-10	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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ATTACHMENT D-15

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)
A-1	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211 (Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214 (Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215 (Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)

A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1 (20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1 (21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1 (22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1 (23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1 (24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1 (25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1 (26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1 (27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1 (28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1 (29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1 (30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1 (31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1 (32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1 (33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1 (34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1 (35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2 (1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2 (2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2 (3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2 (4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2 (5)
B-1	U-234		3.479E-02	3.479E-02	DCF2 (6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2 (7)
B-1	U-238		2.973E-02	2.973E-02	DCF2 (8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2 (9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3 (1)

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond_Alternatives 2 & 3

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\REMED WKR_SHIPROCK EVAP POND_ALTS 2_3.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3 (3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3 (4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3 (5)
D-1	U-234	1.831E-04	1.831E-04	DCF3 (6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3 (7)
D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)

D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3
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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)

D-5					
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC (3,1)	
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC (3,2)	
D-5					
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC (4,1)	
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC (4,2)	
D-5					
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC (5,1)	
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC (5,2)	
D-5					
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC (6,1)	
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (6,2)	
D-5					
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC (7,1)	
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (7,2)	
D-5					
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC (8,1)	
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (8,2)	
D-5					
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC (9,1)	
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (9,2)	

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond_Alternatives 2 & 3

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Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	4.452E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.000E+00	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	not used	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	2.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	not used	1.000E+01	---	T(4)
R011	Times for calculations (yr)	not used	3.000E+01	---	T(5)
R011	Times for calculations (yr)	not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)	not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)	not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	1.485E+01	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	9.550E-01	0.000E+00	---	S1(7)

R012	Initial principal radionuclide (pCi/g): U-238	1.308E+01	0.000E+00	---	S1 (8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1 (6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1 (7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1 (8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	not used	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	not used	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	not used	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	not used	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	not used	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	not used	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	not used	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	not used	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	not used	1.000E-03	---	VWT

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond_Alternatives 2 & 3

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	not used	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	not used	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	not used	2.500E+02	---	UW
R015	Number of unsaturated zone strata	not used	1	---	NS
R015	Unsat. zone 1, thickness (m)	not used	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	not used	1.500E+00	---	DENSUZ (1)
R015	Unsat. zone 1, total porosity	not used	4.000E-01	---	TPUZ (1)
R015	Unsat. zone 1, effective porosity	not used	2.000E-01	---	EPUZ (1)
R015	Unsat. zone 1, field capacity	not used	2.000E-01	---	FCUZ (1)

R015	Unsat. zone 1, soil-specific b parameter	not used	5.300E+00	---	BUZ (1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	not used	1.000E+01	---	HCUZ (1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (6)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU (6,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (7)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU (7,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS (7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH (7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (8)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU (8,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS (8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH (8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	not used	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	not used	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.766E-03	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
R016	Unsaturated zone 1 (cm**3/g)	not used	5.000E+01	---	DCNUCU (2,1)
R016	Saturated zone (cm**3/g)	not used	5.000E+01	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.512E-03	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	not used	1.000E+02	---	DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	not used	1.000E+02	---	DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.572E-04	ALEACH (3)

R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	not used	7.000E+01	---	DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	not used	7.000E+01	---	DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.081E-03	ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (4)
R016	Distribution coefficients for daughter Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	not used	6.000E+04	---	DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	not used	6.000E+04	---	DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.264E-06	ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (5)
R017	Inhalation rate (m**3/yr)	1.840E+04	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.750E-02	1.000E-04	---	MLINH
R017	Exposure duration	1.000E+00	3.000E+01	---	ED
R017	Shielding factor, inhalation	1.000E+00	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	1.000E+00	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	0.000E+00	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.500E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE (12)

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Site-Specific Parameter Summary (continued)					
0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)

R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	1.204E+02	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE (2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE (3)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVS
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI

R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	suppressed
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Contaminated Zone Dimensions Initial Soil Concentrations, pCi/g

Area:	44515.00 square meters	U-234	1.485E+01
Thickness:	1.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0
 Total Dose TDose(t), mrem/yr
 Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	2.000E+00
TDose(t):	1.257E+01	1.255E+01	1.254E+01

M(t): 5.029E-01 5.022E-01 5.014E-01
 0Maximum TDOSE(t): 1.257E+01 mrem/yr at t = 0.000E+00 years
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years													
Water Independent Pathways (Inhalation excludes radon)													
Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
U-234	1.281E-03	0.0001	6.478E+00	0.5153	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.184E-02
U-235	1.701E-01	0.0135	3.751E-01	0.0298	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.001E-03
U-238	5.108E-01	0.0406	4.880E+00	0.3882	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.989E-02
Total	6.822E-01	0.0543	1.173E+01	0.9333	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.567E-01

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years													
Water Dependent Pathways													
Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.561E+00
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.503E-01
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.461E+00
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.257E+01

0*Sum of all water independent and dependent pathways.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years													
Water Independent Pathways (Inhalation excludes radon)													
Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
U-234	1.279E-03	0.0001	6.469E+00	0.5153	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.172E-02
U-235	1.699E-01	0.0135	3.748E-01	0.0299	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.995E-03
U-238	5.100E-01	0.0406	4.873E+00	0.3882	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.978E-02
Total	6.811E-01	0.0543	1.172E+01	0.9333	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.565E-01

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.552E+00	0.5219
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.496E-01	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.453E+00	0.4343
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.255E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.278E-03	0.0001	6.459E+00	0.5153	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.160E-02	0.0065
U-235	1.696E-01	0.0135	3.745E-01	0.0299	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.988E-03	0.0004
U-238	5.092E-01	0.0406	4.866E+00	0.3881	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.967E-02	0.0056
Total	6.801E-01	0.0543	1.170E+01	0.9333	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.563E-01	0.0125

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 2.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.542E+00	0.5219
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.490E-01	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.444E+00	0.4343
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.254E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3

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Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent	Product	Thred	DSR(j,t)	At Time in Years	(mrem/yr)/(pCi/g)
(i)	(j)	Fraction	0.000E+00	1.000E+00	2.000E+00

U-234	U-234	1.000E+00	4.418E-01	4.411E-01	4.405E-01
U-234	Th-230	1.000E+00	2.179E-05	6.531E-05	1.088E-04
U-234	Ra-226+D	1.000E+00	1.978E-09	1.383E-08	3.751E-08
U-234	Pb-210+D	1.000E+00	3.498E-12	5.208E-11	2.238E-10
U-234	ΣDSR(j)		4.418E-01	4.412E-01	4.406E-01
0U-235+D	U-235+D	1.000E+00	5.761E-01	5.752E-01	5.743E-01
U-235+D	Pa-231	1.000E+00	1.138E-04	3.408E-04	5.672E-04
U-235+D	Ac-227+D	1.000E+00	9.622E-07	6.662E-06	1.786E-05
U-235+D	ΣDSR(j)		5.762E-01	5.755E-01	5.749E-01
0U-238	U-238	5.450E-07	2.059E-07	2.056E-07	2.053E-07
0U-238+D	U-238+D	1.000E+00	4.175E-01	4.169E-01	4.162E-01
U-238+D	U-234	1.000E+00	6.235E-07	1.868E-06	3.109E-06
U-238+D	Th-230	1.000E+00	2.050E-11	1.434E-10	3.887E-10
U-238+D	Ra-226+D	1.000E+00	1.396E-15	2.092E-14	9.055E-14
U-238+D	Pb-210+D	1.000E+00	1.977E-18	6.091E-17	4.117E-16
U-238+D	ΣDSR(j)		4.175E-01	4.169E-01	4.162E-01

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t=	0.000E+00	1.000E+00	2.000E+00
U-234	5.659E+01	5.667E+01	5.675E+01	
U-235	4.339E+01	4.344E+01	4.349E+01	
U-238	5.988E+01	5.997E+01	6.006E+01	

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
U-234	1.485E+01	0.000E+00	4.418E-01	5.659E+01	4.418E-01	5.659E+01
U-235	9.550E-01	0.000E+00	5.762E-01	4.339E+01	5.762E-01	4.339E+01
U-238	1.308E+01	0.000E+00	4.175E-01	5.988E+01	4.175E-01	5.988E+01

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Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr
(j)	(i)		t= 0.000E+00 1.000E+00 2.000E+00

U-234	U-234	1.000E+00	6.561E+00	6.551E+00	6.541E+00
U-234	U-238	1.000E+00	8.156E-06	2.443E-05	4.066E-05
U-234	ΣDOSE (j)		6.561E+00	6.551E+00	6.541E+00
0Th-230	U-234	1.000E+00	3.235E-04	9.699E-04	1.615E-03
Th-230	U-238	1.000E+00	2.681E-10	1.875E-09	5.085E-09
Th-230	ΣDOSE (j)		3.235E-04	9.699E-04	1.615E-03
0Ra-226	U-234	1.000E+00	2.937E-08	2.054E-07	5.571E-07
Ra-226	U-238	1.000E+00	1.826E-14	2.736E-13	1.184E-12
Ra-226	ΣDOSE (j)		2.937E-08	2.054E-07	5.571E-07
0Pb-210	U-234	1.000E+00	5.194E-11	7.733E-10	3.324E-09
Pb-210	U-238	1.000E+00	2.586E-17	7.967E-16	5.385E-15
Pb-210	ΣDOSE (j)		5.194E-11	7.733E-10	3.324E-09
0U-235	U-235	1.000E+00	5.501E-01	5.493E-01	5.485E-01
0Pa-231	U-235	1.000E+00	1.086E-04	3.255E-04	5.417E-04
0Ac-227	U-235	1.000E+00	9.189E-07	6.362E-06	1.706E-05
0U-238	U-238	5.450E-07	2.693E-06	2.689E-06	2.685E-06
U-238	U-238	1.000E+00	5.461E+00	5.453E+00	5.444E+00
U-238	ΣDOSE (j)		5.461E+00	5.453E+00	5.444E+00

THF(i) is the thread fraction of the parent nuclide.

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Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g		
(j)	(i)		t= 0.000E+00	1.000E+00	2.000E+00
U-234	U-234	1.000E+00	1.485E+01	1.483E+01	1.481E+01
U-234	U-238	1.000E+00	0.000E+00	3.687E-05	7.364E-05
U-234	ΣS(j):		1.485E+01	1.483E+01	1.481E+01
0Th-230	U-234	1.000E+00	0.000E+00	1.364E-04	2.727E-04
Th-230	U-238	1.000E+00	0.000E+00	1.696E-10	6.778E-10
Th-230	ΣS(j):		0.000E+00	1.364E-04	2.727E-04
0Ra-226	U-234	1.000E+00	0.000E+00	2.955E-08	1.181E-07
Ra-226	U-238	1.000E+00	0.000E+00	2.449E-14	1.957E-13
Ra-226	ΣS(j):		0.000E+00	2.955E-08	1.181E-07
0Pb-210	U-234	1.000E+00	0.000E+00	3.052E-10	2.420E-09
Pb-210	U-238	1.000E+00	0.000E+00	1.900E-16	3.018E-15
Pb-210	ΣS(j):		0.000E+00	3.052E-10	2.420E-09
0U-235	U-235	1.000E+00	9.550E-01	9.536E-01	9.521E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.018E-05	4.029E-05
0Ac-227	U-235	1.000E+00	0.000E+00	3.175E-07	1.254E-06
0U-238	U-238	5.450E-07	7.129E-06	7.118E-06	7.107E-06
U-238	U-238	1.000E+00	1.308E+01	1.306E+01	1.304E+01
U-238	ΣS(j):		1.308E+01	1.306E+01	1.304E+01

THF(i) is the thread fraction of the parent nuclide.

0RESCALC.EXE execution time = 9.25 seconds

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Part III: Intake Quantities and Health Risk Factors

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Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)
Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)

Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

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Cancer Risk Slope Factors Summary Table (continued)
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Intrisk : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3
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Risk Slope and Environmental Transport Factors for the Ground Pathway

0Nuclide Slope(i)* ETFG(i,t) At Time in Years (dimensionless)
(i) t= 0.000E+00 1.000E+00 2.000E+00

Ac-227	1.990E-10	2.453E-01	2.453E-01	2.453E-01
At-218	2.740E-11	2.401E-01	2.401E-01	2.401E-01
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	2.415E-01	2.415E-01	2.415E-01
Bi-211	1.900E-07	2.415E-01	2.415E-01	2.415E-01
Bi-214	7.340E-06	2.401E-01	2.401E-01	2.401E-01
Bi-215	1.080E-06	2.415E-01	2.415E-01	2.415E-01
Fr-223	1.350E-07	2.424E-01	2.424E-01	2.424E-01
Hg-206	4.830E-07	2.425E-01	2.425E-01	2.425E-01
Pa-231	1.270E-07	2.425E-01	2.425E-01	2.425E-01
Pa-234	6.620E-06	2.400E-01	2.400E-01	2.400E-01
Pa-234m	9.060E-08	2.401E-01	2.401E-01	2.401E-01
Pb-210	1.480E-09	2.500E-01	2.500E-01	2.500E-01
Pb-211	2.910E-07	2.400E-01	2.400E-01	2.400E-01
Pb-214	9.940E-07	2.425E-01	2.425E-01	2.425E-01
Po-210	4.510E-11	2.400E-01	2.400E-01	2.400E-01
Po-211	3.760E-08	2.395E-01	2.395E-01	2.395E-01
Po-214	3.850E-10	2.395E-01	2.395E-01	2.395E-01
Po-215	7.480E-10	2.406E-01	2.406E-01	2.406E-01
Po-218	6.840E-15	2.455E-01	2.455E-01	2.455E-01
Ra-223	4.550E-07	2.429E-01	2.429E-01	2.429E-01
Ra-226	2.500E-08	2.429E-01	2.429E-01	2.429E-01
Rn-218	3.390E-09	2.395E-01	2.395E-01	2.395E-01
Rn-219	2.350E-07	2.425E-01	2.425E-01	2.425E-01
Rn-222	1.690E-09	2.400E-01	2.400E-01	2.400E-01
Th-227	4.450E-07	2.429E-01	2.429E-01	2.429E-01
Th-230	8.450E-10	2.449E-01	2.449E-01	2.449E-01
Th-231	2.490E-08	2.500E-01	2.500E-01	2.500E-01
Th-234	1.780E-08	2.455E-01	2.455E-01	2.455E-01
Tl-206	6.110E-09	2.400E-01	2.400E-01	2.400E-01
Tl-207	1.590E-08	2.400E-01	2.400E-01	2.400E-01
Tl-210	1.340E-05	2.400E-01	2.400E-01	2.400E-01
U-234	2.530E-10	2.498E-01	2.498E-01	2.498E-01
U-235	5.510E-07	2.429E-01	2.429E-01	2.429E-01
U-238	1.240E-10	2.449E-01	2.449E-01	2.449E-01

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	1.863E+02	0.000E+00	0.000E+00	0.000E+00	4.472E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.472E+02
U-235	1.198E+01	0.000E+00	0.000E+00	0.000E+00	2.876E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.876E+01
U-238	1.641E+02	0.000E+00	0.000E+00	0.000E+00	3.939E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.939E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.187E-14	0.0000	2.841E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.091E-15	0.0000
Pa-231	3.109E-13	0.0000	9.651E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.859E-14	0.0000
Pb-210	8.023E-20	0.0000	2.956E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.921E-18	0.0000
Ra-226	1.981E-14	0.0000	3.489E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.528E-16	0.0000
Th-230	1.412E-14	0.0000	2.917E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.447E-13	0.0000
U-234	9.377E-10	0.0001	5.180E-06	0.5199	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.265E-08	0.0043
U-235	1.336E-07	0.0134	2.995E-07	0.0301	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.803E-09	0.0003
U-238	3.750E-07	0.0376	3.882E-06	0.3896	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.743E-08	0.0048
Total	5.096E-07	0.0511	9.361E-06	0.9395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.288E-08	0.0093

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.281E-13	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.003E-11	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.756E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.345E-14	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.943E-11	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-06	0.5242
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.359E-07	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.304E-06	0.4320
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.964E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 0.000E+00 years
Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	9.377E-10	0.0001	5.180E-06	0.5199	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.265E-08	0.0043
U-235	1.336E-07	0.0134	2.995E-07	0.0301	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.803E-09	0.0003
U-238	3.750E-07	0.0376	3.882E-06	0.3896	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.743E-08	0.0048
Total	5.096E-07	0.0511	9.361E-06	0.9395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.288E-08	0.0093

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.223E-06	0.5242
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.359E-07	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.304E-06	0.4320
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.964E-06	1.0000

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***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

Radio-Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.984E-06	0.000E+00	0.000E+00	0.000E+00	9.562E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.562E-06
Pa-231	2.531E-04	0.000E+00	0.000E+00	0.000E+00	6.075E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.075E-04
Pb-210	3.829E-09	0.000E+00	0.000E+00	0.000E+00	9.189E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.189E-09
Ra-226	3.708E-07	0.000E+00	0.000E+00	0.000E+00	8.898E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.898E-07
Th-230	1.712E-03	0.000E+00	0.000E+00	0.000E+00	4.109E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.109E-03
U-234	1.860E+02	0.000E+00	0.000E+00	0.000E+00	4.465E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.465E+02
U-235	1.196E+01	0.000E+00	0.000E+00	0.000E+00	2.871E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.871E+01
U-238	1.639E+02	0.000E+00	0.000E+00	0.000E+00	3.933E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.933E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 1.000E+00 years

Radionuclides

[illegible]

Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
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Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	2.899E-13	0.0000	1.967E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.448E-14	0.0000
Pa-231	9.313E-13	0.0000	2.891E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.055E-13	0.0000
Pb-210	1.195E-18	0.0000	4.401E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-16	0.0000
Ra-226	1.386E-13	0.0000	2.440E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.068E-15	0.0000
Th-230	4.233E-14	0.0000	8.746E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.337E-13	0.0000
U-234	9.363E-10	0.0001	5.172E-06	0.5199	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.259E-08	0.0043
U-235	1.334E-07	0.0134	2.990E-07	0.0301	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-09	0.0003
U-238	3.744E-07	0.0376	3.876E-06	0.3896	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.736E-08	0.0048
Total	5.088E-07	0.0511	9.347E-06	0.9395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.274E-08	0.0093

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Intrisk : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.272E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.005E-11	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.592E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.640E-13	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.823E-11	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.215E-06	0.5242
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.353E-07	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.298E-06	0.4320
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.949E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	9.364E-10	0.0001	5.172E-06	0.5199	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.259E-08	0.0043
U-235	1.334E-07	0.0134	2.991E-07	0.0301	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.799E-09	0.0003
U-238	3.744E-07	0.0376	3.876E-06	0.3896	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.736E-08	0.0048
Total	5.088E-07	0.0511	9.347E-06	0.9395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.274E-08	0.0093

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Intrisk : Remediation Wkrs at Shiprock GW Evap. Pond_Alternatives 2 & 3

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.215E-06	0.5242
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.353E-07	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.298E-06	0.4320
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.949E-06	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Intrisk : Remediation Wkrs at Shiprock GW Evap. Pond_Alternatives 2 & 3

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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 2.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.573E-05	0.000E+00	0.000E+00	0.000E+00	3.776E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.776E-05
Pa-231	5.055E-04	0.000E+00	0.000E+00	0.000E+00	1.213E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.213E-03
Pb-210	3.037E-08	0.000E+00	0.000E+00	0.000E+00	7.288E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.288E-08
Ra-226	1.482E-06	0.000E+00	0.000E+00	0.000E+00	3.555E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.555E-06
Th-230	3.422E-03	0.000E+00	0.000E+00	0.000E+00	8.211E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.211E-03
U-234	1.858E+02	0.000E+00	0.000E+00	0.000E+00	4.458E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.458E+02
U-235	1.195E+01	0.000E+00	0.000E+00	0.000E+00	2.867E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.867E+01
U-238	1.636E+02	0.000E+00	0.000E+00	0.000E+00	3.927E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.927E+02

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 2.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 2.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	7.774E-13	0.0000	5.275E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.881E-14	0.0000
Pa-231	1.550E-12	0.0000	4.812E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.420E-13	0.0000
Pb-210	5.134E-18	0.0000	1.892E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.069E-16	0.0000
Ra-226	3.757E-13	0.0000	6.616E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.897E-15	0.0000
Th-230	7.050E-14	0.0000	1.457E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.222E-12	0.0000
U-234	9.348E-10	0.0001	5.164E-06	0.5199	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.252E-08	0.0043
U-235	1.332E-07	0.0134	2.986E-07	0.0301	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.795E-09	0.0003
U-238	3.739E-07	0.0376	3.870E-06	0.3896	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.728E-08	0.0048
Total	5.081E-07	0.0511	9.333E-06	0.9395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.260E-08	0.0093

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T½ Limit = 180 days

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Intrisk : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 2.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.091E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.001E-11	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.404E-15	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.448E-13	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.469E-10	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.208E-06	0.5242
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.346E-07	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.291E-06	0.4320
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.934E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 2.000E+00 years
Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 2.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	9.353E-10	0.0001	5.164E-06	0.5199	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.252E-08	0.0043
U-235	1.332E-07	0.0134	2.986E-07	0.0301	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.795E-09	0.0003
U-238	3.739E-07	0.0376	3.870E-06	0.3896	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.728E-08	0.0048
Total	5.081E-07	0.0511	9.333E-06	0.9395	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.260E-08	0.0093

Intrisk : Remediation Wkrs at Shiprock GW Evap. Pond Alternatives 2 & 3
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 2.000E+00 years

Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.208E-06	0.5242
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.347E-07	0.0438
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.291E-06	0.4320
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.934E-06	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Site-specific
Construction Worker Inputs

/HTML"Output to XLS

Attachment D-15-2a. Pond Remediation Worker Sediment Calculation Inputs, Chemical Risk, Alternatives 2/3

Variable	Site-Specific Value	Rationale
$A_{c\text{-doz}}$ (areal extent of dozing) acres	11	Pond area.
A_{excav} (area of excavation site) m^2	44515	Pond area.
$A_{c\text{-grade}}$ (areal extent of grading) acres	0	No grading of contaminated material assumed. Grading occurs after backfill.
A (PEF Dispersion Constant)	2.4538	Default (could not be modified).
A_{surf} (areal extent of site) m^2	44515.46	Pond area.
A_{till} (areal extent of tilling) acres	0	Tilling assumed after backfill.
$B_{l\text{-doz}}$ (dozing blade length) m	3	Approx. 10 ft (3.048 m) per data call.
$B_{l\text{-grade}}$ (grading blade length) m	0	Grading assumed after backfill.
B (PEF Dispersion Constant)	17.566	Default (could not be modified).
C (PEF Dispersion Constant)	189.0426	Default (could not be modified).
d_{excav} (average depth of excavation site) m	0.25	0.25 m per data call.
F_D Unitless Dispersion Correction Factor	0.185837208	Default.
$F(x)$ (function dependant on U_m/U_t derived using Cowherd et al.	0.003765285	Default.
J_T (g/m^2s)	3.82823E-05	Calculated.
M_{doz} (dust emitted from dozing operations) ξ	4712.435258	Calculated.
M_{excav} (dust emitted from excavation soil dumping) ξ	12263940.94	Calculated.
$M_{m\text{-doz}}$ (Gravimetric soil moisture content) %	7.9	Default.
$M_{m\text{-excav}}$ (Gravimetric soil moisture content) %	12	Default.
M_{wind} (dust emitted by wind erosion) ξ	1262.492683	Calculated.
$N_{A\text{-doz}}$ (number of times site was dozed)	3	From data call.
$N_{A\text{-dump}}$ (number of times soil is dumped)	6591 ^a	See footnote 'a' below.
$N_{A\text{-grade}}$ (number of times site was graded)	0	Grading assumed after backfill.
$N_{A\text{-till}}$ (number of times soil is tilled)	0	Tilling assumed after backfill.
Q/C_{sa} (g/m^2 -s per kg/m^3)	8.286871601	Calculated.
ρ_{soil} (density) g/cm^3 - chemical-specific	2.2	Approx. density of rock salt
s_{doz} (soil silt content) %	6.9	Default.
AF_{con} (skin adherence factor - construction worker) mg/cm^2	0.3	
AT_{con} (averaging time - construction worker) day	365	
$AT_{\text{con-a}}$ (averaging time - construction worker) day	350	
BW_{con} (body weight - construction worker) kg	80	
ED_{con} (exposure duration - construction worker) yr	1	ED for construction worker always 1 yr in calculations

Site-specific
Construction Worker Inputs

EF _{con} (exposure frequency - construction worker) day/y	250	Default.
ET _{con} (exposure time - construction worker) hr/day	8	Default.
THQ (target hazard quotient) unitless	0.1	
IRS _{con} (soil ingestion rate - construction worker) mg/day	330	Default.
LT (lifetime) yr	70	
SA _{con} (surface area - construction worker) cm ² /day	3527	
TR (target cancer risk) unitless	0.000001	
S _{doz} (dozing speed) kph	3.2	Estimated maximum from data call (1 to 2 mph)
S _{grade} (grading speed) kph	0	Grading assumed after backfill.
s _{till} (soil silt content) %	18	
t _c (overall duration of construction) hour	8400	Calculated.
T _c (overall duration of construction) :	30240000	
T (time over which traffic occurs) s	7200000	Calculated.
T _t (overall duration of traffic) s	7200000	
U _m (mean annual wind speed) m/s	3.26	Calculated from 2022 meteorological data for Shiprock site cliffRouterMet station.
U _t (equivalent threshold value) m/s	11.32	Default.
VKT _{doz} (sum of fleet vehicle km traveled) km	44.517	Calculated
V (fraction of vegetative cover)	0	No vegetative cover over pond sediment.

Notes:

^a Calculation of number of times soil is dumped (NA-dump)

$$\text{NA-dump} = V_s / V_d$$

Where:

V_s - total volume of sediment/soil removed (not including volume of liner) (m³) = V_t - V_I = 13182 m³

Where:

V_t = total volume of waste being removed (sediment, soil and liner) = 19850 y³ = 15185 m³

V_I = volume of liner = Area (44515 m²) x Thickness (0.045 m) = 2003 m

V_d = device dumping capacity (2 m³)

Therefore,

$$\text{NA-dump} = 13182 \text{ m}^3 / 2 \text{ m}^3 = 6591$$

Output generated 27MAR2023:18:28:16

**Attachment D-15-2b. Pond Remediation Worker Sediment Exposures, Chemical Risk,
Alternatives 2/3**

Chemical	SF _o (mg/kg-day) ⁻¹	SF _o Ref	IUR (ug/m ³) ⁻¹	IUR Ref	RfD (mg/kg-day)	RfD Ref	RfC (mg/m ³)	RfC Ref	GIABS	ABS
Manganese (Non-diet)	-		-		2.40E-02	G /Chronic	5.00E-05	I /Chronic	4.00E-02	-
Uranium	-		-		2.00E-04	A /Subchronic	1.00E-04	A /Subchronic	1.00E+00	-
<i>*Total Risk/HI</i>	-		-		-		-		-	-

Output generated 27MAR2023:18:28:16

Site-specific

Construction Worker Inputs

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RBA	Soil Saturation Concentration (mg/kg)	S (mg/L)	K _{oc} (cm ³ /g)	K _d (cm ³ /g)	HLC (atm·m ³ /mole)	Henry's Law Constant Used in Calcs (unitless)	H` and HLC Ref	Normal Boiling Point BP (K)	BP Ref	Critical Temperature T _c (K)
1.00E+00	-	-	-	6.50E+01	-	-		2.37E+03	PHYSPROP	4.33E+03
1.00E+00	-	-	-	4.50E+02	-	-		4.09E+03	CRC	1.37E+04
-	-	-	-	-	-	-		-		-

Site-specific

Construction Worker Inputs

/HTML"Output to XLS

T _c Ref	Chemical Type	D _{ia} (cm ² /s)	D _{iw} (cm ² /s)	D _A (cm ² /s)	Particulate Emission Factor (m ³ /kg)	Volatilization Factor Unlimited Reservoir (m ³ /kg)	Volatilization Factor Mass Limit (m ³ /kg)	Volatilization Factor Selected (m ³ /kg)	Concentration (mg/kg)
CRC	INORGANIC	-	-	-	1.16E+06	-	-	-	1.63E+02
YAWS	INORGANIC	-	-	-	1.16E+06	-	-	-	3.90E+01
		-	-	-	-	-	-	-	-

Site-specific

Construction Worker Inputs

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Ingestion Risk	Dermal Risk	Inhalation Risk	Carcinogenic Risk	Ingestion HQ	Dermal HQ	Inhalation HQ	Noncarcinogenic HI
-	-	-	-	2.00E-02	-	6.65E-01	6.85E-01
-	-	-	-	5.74E-01	-	7.96E-02	6.54E-01
-	-	-	-	5.94E-01	-	7.44E-01	1.34E+00

Attachment B-15-2c. Inhalation Unit Risk Metadata

Chemical	CAS Number	Chemical Type	IUR (ug/m ³) ⁻¹	Toxicity Source	EPA Cancer Classification	IUR Tumor Type	IUR Target Organ	IUR Species	IUR Method	IUR Route	IUR Treatment Duration	IUR Study Reference	IUR Notes
Manganese (Non-diet)	7439-96-5	Inorganics	-										
Uranium (Soluble Salts)	7440-61-1	Inorganics	-										

Attachment B-15-2d. Inhalation Unit Risk Metadata

Chemical	CAS Number	Chemical Type	SF _o (mg/kg-day) ¹	Toxicity Source	EPA Cancer Classification	SF _o Tumor Type	SF _o Target Organ	SF _o Species	SF _o Method	SF _o Route	SF _o Treatment Duration	SF _o Study Reference	SF _o Notes
Manganese (Non-diet)	7439-96-5	Inorganics	-										
Uranium (Soluble Salts)	7440-61-1	Inorganics	-										

Attachment B-15-2e. Inhalation Unit Risk Metadata

Chemical	CAS Number	Chemical Type	Subchronic RfD (mg/kg-day)	RFDOS_SRC	Subchronic RfD Basis	Subchronic RfD Confidence Level	Subchronic RfD Critical Effect
Manganese (Non-diet)	7439-96-5	Inorganics	-				
Uranium (Soluble Salts)	7440-61-1	Inorganics	0.0002	ATSDR	LOAEL: 0.06 mg/kg-day	NA	Nuclear vesiculation, cytoplasmic vacuolation, tubular dilation, interstitial lymphoid cuffing

Subchronic RfD Target Organ	Subchronic RfD Modifying Factor	Subchronic RfD Uncertainty Factor	Subchronic RfD Species	Subchronic RfD Route	Subchronic RfD Study Duration	Subchronic RfD Study Reference	Subchronic RfD Notes
Renal	NA	300	Rat	Renal	91 days	Gilman et al. 1998a	NA

Attachment B-15-2f. Inhalation Unit Risk Metadata

Chemical	CAS Number	Chemical Type	Subchronic RfC (mg/m ³)	RFCIS_SRC	Subchronic RfC Basis	Subchronic RfC Confidence Level	Subchronic RfC Critical Effect
Manganese (Non-diet)	7439-96-5	Inorganics					
Uranium (Soluble Salts)	7440-61-1	Inorganics	0.0001	ATSDR	LOAEL: 0.15 mg/m3	NA	Very slight renal degeneration in approximately 50% of dogs

Site-specific
Construction Worker Inputs

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Subchronic RfC Target Organ	Subchronic RfC Modifying Factor	Subchronic RfC Uncertainty Factor	Subchronic RfC Species	Subchronic RfC Route	Subchronic RfC Study Duration	Subchronic RfC Study Reference	Subchronic RfC Notes
Renal	NA	300	Dog	Renal	5 weeks	Rothstein 1949a	NA

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Dose Conversion Factor (and Related) Parameter Summary

Current Library: DCFPAK3.02

Default Library: DCFPAK3.02

0 Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)
DCSF	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT(11)
DCSF	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT(12)
DCSF	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT(13)
DCSF	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT(14)
DCSF	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT(15)
DCSF	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT(16)

DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Dose conversion factors for inhalation, mrem/pCi:			
	1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/23/2023 15:16	Page 3
		Parent Dose Report			
		Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3			
		File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF			

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ac-227+D	6.459E-01	6.459E-01	DCF2 (1)
	DCSF	Pa-231	8.505E-01	8.505E-01	DCF2 (2)
	DCSF	Pb-210+D	2.126E-02	2.126E-02	DCF2 (3)
	DCSF	Pb-210+D1	2.126E-02	2.126E-02	DCF2 (4)
	DCSF	Po-210	1.582E-02	1.582E-02	DCF2 (5)
	DCSF	Ra-226+D	3.528E-02	3.528E-02	DCF2 (6)
	DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
	DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
	DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
	DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
	DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)

DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

1RESRAD-OFFSITE, Version 4.0 T_{1/2} Limit = 30 days 03/23/2023 15:16 Page 4
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)
TF				
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF				

TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF				
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF				
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF				
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 5

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				
TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				

TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 6
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)
TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210 , fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)

TF				
TF	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230 , fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234 , fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D , fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238 , fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D , fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
RELT	2nd release time (years)	1.000E+00		---	RelTime(2)
RELT	3rd release time (years)	2.000E+00		---	RelTime(3)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)
VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(8)

VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 8

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
0					
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)

DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)

DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 10					
Parent Dose Report					
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3					
File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF					

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)
DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach (1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBearing
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY (1)

LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-7.500E+01	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-4.370E+01	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	7.261E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	7.581E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-7.778E+01	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-4.648E+01	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	7.595E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	7.915E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-2.417E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-1.417E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	8.026E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	9.026E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-1.444E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-4.440E+01	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	7.970E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	8.970E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-1.694E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.305E+02	6.562E+01	---	DWELLXY(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	7.372E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	7.859E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T(2)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+00	---	T(3)
TIME	Times at which dose/risk are to be reported (yr)	not used	6.000E+00	---	T(4)

TIME	Times at which dose/risk are to be reported (yr)	not used	1.200E+01	---	T(5)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+01	---	T(6)
TIME	Times at which dose/risk are to be reported (yr)	not used	7.500E+01	---	T(7)
TIME	Times at which dose/risk are to be reported (yr)	not used	1.750E+02	---	T(8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T(9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T(10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	1.750E-02	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is sumerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primmry contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPRAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPRAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)
AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF(3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG(3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF(3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN(3)

AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB(3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY(3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP(3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG(3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC(3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF(3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO(4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN(4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF(4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG(4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF(4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN(4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB(4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY(4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP(4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG(4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC(4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF(4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX

AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	AIRT	Joint Frequency in N Sector				
	AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,1)
	AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,1)

AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ(4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ(1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ(1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ(1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ(1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ(1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ(2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ(2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ(2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ(2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ(2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ(3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ(3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ(3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)
AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)
AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				

AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ(2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ(2,2,5)

AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ(2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ(2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ(2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ(3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ(3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ(3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ(3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ(4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ(4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ(5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ(5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ(6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,5)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)

AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ(6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,6)

AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ(1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ(1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ(1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ(1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ(1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ(2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ(2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ(2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ(3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ(3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,7)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ(4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ(5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ(5,4,7)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				

AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,8)

AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ(5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ(1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ(1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ(1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ(1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ(1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ(2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ(2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ(2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ(2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ(2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ(3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ(3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ(3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,9)

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T_{1/2} Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)

AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
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AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)
AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)

AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)

AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)
AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)

AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				

AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,15)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ (5,4,16)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	5.569E+02	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	1.659E+02	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
------	---	---	---	-----	--

0 = (total porosity + distribution coefficient*dry bulk density) / total porosity

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ(1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)

USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR (1)

WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)
LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI (1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI (1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI (2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI (2,2)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	1.750E-02	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	1.750E-02	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)
SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA(6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA(7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA(8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA(9)

SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA(10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA(11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA(12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	7.042E+01	1.325E+01	---	RAD_SHAPE(13)
SEXT	Outer annular radius (m), ring 14:	1.408E+02	2.650E+01	---	RAD_SHAPE(14)
SEXT	Outer annular radius (m), ring 15:	2.112E+02	3.975E+01	---	RAD_SHAPE(15)
SEXT	Outer annular radius (m), ring 16:	2.817E+02	5.300E+01	---	RAD_SHAPE(16)
SEXT	Outer annular radius (m), ring 17:	3.521E+02	6.625E+01	---	RAD_SHAPE(17)
SEXT	Outer annular radius (m), ring 18:	4.225E+02	7.950E+01	---	RAD_SHAPE(18)
SEXT	Outer annular radius (m), ring 19:	4.929E+02	9.275E+01	---	RAD_SHAPE(19)
SEXT	Outer annular radius (m), ring 20:	5.633E+02	1.060E+02	---	RAD_SHAPE(20)
SEXT	Outer annular radius (m), ring 21:	6.338E+02	1.192E+02	---	RAD_SHAPE(21)
SEXT	Outer annular radius (m), ring 22:	7.042E+02	1.325E+02	---	RAD_SHAPE(22)
SEXT	Outer annular radius (m), ring 23:	7.746E+02	1.458E+02	---	RAD_SHAPE(23)
SEXT	Outer annular radius (m), ring 24:	8.450E+02	1.590E+02	---	RAD_SHAPE(24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA(13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA(14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA(15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA(16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA(17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA(18)
SEXT	Ring 19	0.000E+00	2.000E-01	---	FRACA(19)
SEXT	Ring 20	0.000E+00	1.700E-01	---	FRACA(20)
SEXT	Ring 21	2.300E-02	1.500E-01	---	FRACA(21)
SEXT	Ring 22	5.300E-02	1.300E-01	---	FRACA(22)
SEXT	Ring 23	4.900E-02	1.200E-01	---	FRACA(23)
SEXT	Ring 24	2.000E-02	5.200E-02	---	FRACA(24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	5.344E+02	5.344E+02	---	RAD_SHAPE(25)
SEXT	Outer annular radius (m), ring 26:	5.549E+02	5.549E+02	---	RAD_SHAPE(26)
SEXT	Outer annular radius (m), ring 27:	5.754E+02	5.754E+02	---	RAD_SHAPE(27)
SEXT	Outer annular radius (m), ring 28:	5.959E+02	5.959E+02	---	RAD_SHAPE(28)
SEXT	Outer annular radius (m), ring 29:	6.207E+02	6.207E+02	---	RAD_SHAPE(29)
SEXT	Outer annular radius (m), ring 30:	6.455E+02	6.455E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	6.702E+02	6.702E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	6.950E+02	6.950E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	7.197E+02	7.197E+02	---	RAD_SHAPE(33)

SEXT	Outer annular radius (m), ring 34:	7.445E+02	7.445E+02	---	RAD_SHAPE (34)
SEXT	Outer annular radius (m), ring 35:	7.671E+02	7.671E+02	---	RAD_SHAPE (35)
SEXT	Outer annular radius (m), ring 36:	7.898E+02	7.898E+02	---	RAD_SHAPE (36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA (25)
SEXT	Ring 26	1.515E-02	1.515E-02	---	FRACA (26)
SEXT	Ring 27	3.824E-02	3.824E-02	---	FRACA (27)
SEXT	Ring 28	5.286E-02	5.286E-02	---	FRACA (28)
SEXT	Ring 29	5.775E-02	5.775E-02	---	FRACA (29)
SEXT	Ring 30	5.528E-02	5.528E-02	---	FRACA (30)
SEXT	Ring 31	5.303E-02	5.303E-02	---	FRACA (31)
SEXT	Ring 32	5.096E-02	5.096E-02	---	FRACA (32)
SEXT	Ring 33	4.905E-02	4.905E-02	---	FRACA (33)
SEXT	Ring 34	4.728E-02	4.728E-02	---	FRACA (34)
SEXT	Ring 35	3.127E-02	3.127E-02	---	FRACA (35)
SEXT	Ring 36	8.151E-03	8.151E-03	---	FRACA (36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	5.679E+02	5.679E+02	---	RAD_SHAPE (37)
SEXT	Outer annular radius (m), ring 38:	5.876E+02	5.876E+02	---	RAD_SHAPE (38)
SEXT	Outer annular radius (m), ring 39:	6.074E+02	6.074E+02	---	RAD_SHAPE (39)
SEXT	Outer annular radius (m), ring 40:	6.271E+02	6.271E+02	---	RAD_SHAPE (40)
SEXT	Outer annular radius (m), ring 41:	6.523E+02	6.523E+02	---	RAD_SHAPE (41)
SEXT	Outer annular radius (m), ring 42:	6.774E+02	6.774E+02	---	RAD_SHAPE (42)
SEXT	Outer annular radius (m), ring 43:	7.025E+02	7.025E+02	---	RAD_SHAPE (43)
SEXT	Outer annular radius (m), ring 44:	7.277E+02	7.277E+02	---	RAD_SHAPE (44)
SEXT	Outer annular radius (m), ring 45:	7.528E+02	7.528E+02	---	RAD_SHAPE (45)
SEXT	Outer annular radius (m), ring 46:	7.780E+02	7.780E+02	---	RAD_SHAPE (46)
SEXT	Outer annular radius (m), ring 47:	8.001E+02	8.001E+02	---	RAD_SHAPE (47)
SEXT	Outer annular radius (m), ring 48:	8.222E+02	8.222E+02	---	RAD_SHAPE (48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA (37)
SEXT	Ring 38	1.422E-02	1.422E-02	---	FRACA (38)
SEXT	Ring 39	3.603E-02	3.603E-02	---	FRACA (39)
SEXT	Ring 40	4.998E-02	4.998E-02	---	FRACA (40)
SEXT	Ring 41	5.473E-02	5.473E-02	---	FRACA (41)
SEXT	Ring 42	5.249E-02	5.249E-02	---	FRACA (42)
SEXT	Ring 43	5.043E-02	5.043E-02	---	FRACA (43)
SEXT	Ring 44	4.853E-02	4.853E-02	---	FRACA (44)
SEXT	Ring 45	4.677E-02	4.677E-02	---	FRACA (45)
SEXT	Ring 46	4.514E-02	4.514E-02	---	FRACA (46)

SEXT	Ring 47	2.993E-02	2.993E-02	---	FRACA(47)
SEXT	Ring 48	7.835E-03	7.835E-03	---	FRACA(48)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	6.696E+02	6.696E+02	---	RAD_SHAPE(49)
SEXT	Outer annular radius (m), ring 50:	6.916E+02	6.916E+02	---	RAD_SHAPE(50)
SEXT	Outer annular radius (m), ring 51:	7.136E+02	7.136E+02	---	RAD_SHAPE(51)
SEXT	Outer annular radius (m), ring 52:	7.355E+02	7.355E+02	---	RAD_SHAPE(52)
SEXT	Outer annular radius (m), ring 53:	7.575E+02	7.575E+02	---	RAD_SHAPE(53)
SEXT	Outer annular radius (m), ring 54:	7.866E+02	7.866E+02	---	RAD_SHAPE(54)
SEXT	Outer annular radius (m), ring 55:	8.157E+02	8.157E+02	---	RAD_SHAPE(55)
SEXT	Outer annular radius (m), ring 56:	8.448E+02	8.448E+02	---	RAD_SHAPE(56)
SEXT	Outer annular radius (m), ring 57:	8.739E+02	8.739E+02	---	RAD_SHAPE(57)
SEXT	Outer annular radius (m), ring 58:	8.969E+02	8.969E+02	---	RAD_SHAPE(58)
SEXT	Outer annular radius (m), ring 59:	9.199E+02	9.199E+02	---	RAD_SHAPE(59)
SEXT	Outer annular radius (m), ring 60:	9.429E+02	9.429E+02	---	RAD_SHAPE(60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA(49)
SEXT	Ring 50	8.224E-03	8.224E-03	---	FRACA(50)
SEXT	Ring 51	2.260E-02	2.260E-02	---	FRACA(51)
SEXT	Ring 52	3.416E-02	3.416E-02	---	FRACA(52)
SEXT	Ring 53	4.399E-02	4.399E-02	---	FRACA(53)
SEXT	Ring 54	4.740E-02	4.740E-02	---	FRACA(54)
SEXT	Ring 55	4.537E-02	4.537E-02	---	FRACA(55)
SEXT	Ring 56	4.352E-02	4.352E-02	---	FRACA(56)
SEXT	Ring 57	4.182E-02	4.182E-02	---	FRACA(57)
SEXT	Ring 58	3.234E-02	3.234E-02	---	FRACA(58)
SEXT	Ring 59	1.728E-02	1.728E-02	---	FRACA(59)
SEXT	Ring 60	5.360E-03	5.360E-03	---	FRACA(60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	6.430E+02	6.430E+02	---	RAD_SHAPE(61)
SEXT	Outer annular radius (m), ring 62:	6.638E+02	6.638E+02	---	RAD_SHAPE(62)
SEXT	Outer annular radius (m), ring 63:	6.847E+02	6.847E+02	---	RAD_SHAPE(63)
SEXT	Outer annular radius (m), ring 64:	7.055E+02	7.055E+02	---	RAD_SHAPE(64)
SEXT	Outer annular radius (m), ring 65:	7.300E+02	7.300E+02	---	RAD_SHAPE(65)
SEXT	Outer annular radius (m), ring 66:	7.544E+02	7.544E+02	---	RAD_SHAPE(66)
SEXT	Outer annular radius (m), ring 67:	7.789E+02	7.789E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	8.033E+02	8.033E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	8.278E+02	8.278E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	8.522E+02	8.522E+02	---	RAD_SHAPE(70)

SEXT	Outer annular radius (m), ring 71:	8.763E+02	8.763E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	9.004E+02	9.004E+02	---	RAD_SHAPE(72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.195E-02	1.195E-02	---	FRACA (62)
SEXT	Ring 63	3.106E-02	3.106E-02	---	FRACA (63)
SEXT	Ring 64	4.421E-02	4.421E-02	---	FRACA (64)
SEXT	Ring 65	4.896E-02	4.896E-02	---	FRACA (65)
SEXT	Ring 66	4.720E-02	4.720E-02	---	FRACA (66)
SEXT	Ring 67	4.556E-02	4.556E-02	---	FRACA (67)
SEXT	Ring 68	4.404E-02	4.404E-02	---	FRACA (68)
SEXT	Ring 69	4.262E-02	4.262E-02	---	FRACA (69)
SEXT	Ring 70	4.130E-02	4.130E-02	---	FRACA (70)
SEXT	Ring 71	2.784E-02	2.784E-02	---	FRACA (71)
SEXT	Ring 72	7.584E-03	7.584E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM

RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK (1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK (2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT (1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT (2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT (3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT (4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK (1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK (2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT (1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT (2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT (3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT (4)

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active

```
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Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File  : SHIPROCK ALTS 2 3 OFFSITE RESA.ROF
```

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

```

t (years): 0.000E+00 1.000E+00
TDOSE(t): 2.709E-03 2.716E-03
M(t): 1.084E-04 1.086E-04
0Maximum TDOSE(t): 2.719E-03 mrem/yr at t = 2 years
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK ALTS 2 3 OFFSITE RESA.ROF

```

[illegible][illegible]

U-234	4.76E-10	0	1.47E-03	54	0.00E+00	0	1.56E-05	1	2.37E-07	0	1.04E-06	0	4.61E-09	0	1.49E-03	55
U-235	9.03E-07	0	8.54E-05	3	0.00E+00	0	9.54E-07	0	1.45E-08	0	6.34E-08	0	2.81E-10	0	8.73E-05	3
U-238	4.86E-06	0	1.11E-03	41	0.00E+00	0	1.33E-05	0	2.03E-07	0	8.86E-07	0	3.93E-09	0	1.13E-03	42

Total	5.77E-06	0	2.67E-03	99	0.00E+00	0	2.99E-05	1	4.54E-07	0	1.99E-06	0	8.82E-09	0	2.71E-03	100
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0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	8.52E-10	0	1.48E-03	54	0.00E+00	0	1.57E-05	1	2.41E-07	0	1.04E-06	0	1.37E-08	0	1.50E-03	55
U-235	9.51E-07	0	8.56E-05	3	0.00E+00	0	9.58E-07	0	1.48E-08	0	6.38E-08	0	8.39E-10	0	8.76E-05	3
U-238	5.03E-06	0	1.11E-03	41	0.00E+00	0	1.34E-05	0	2.05E-07	0	8.92E-07	0	1.17E-08	0	1.13E-03	42
Total	5.98E-06	0	2.68E-03	99	0.00E+00	0	3.00E-05	1	4.61E-07	0	2.00E-06	0	2.63E-08	0	2.72E-03	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 43

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

Parent (i)	Product (j)	Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g) 0.000E+00 1.000E+00
U-234	U-234	1.000E+00	1.004E-04 1.007E-04
U-234	Th-230	1.000E+00	4.956E-09 1.490E-08
U-234	Ra-226+D	1.000E+00	8.919E-14 6.303E-13

U-234	Pb-210+D	1.000E+00	3.958E-16	5.931E-15
U-234	Po-210	1.000E+00	1.092E-16	2.692E-15
U-234	ΣDSR(j)		1.004E-04	1.007E-04
0U-234	U-234	1.339E-06	1.345E-10	1.348E-10
U-234	Th-230	1.339E-06	6.636E-15	1.995E-14
U-234	Ra-226+D	1.339E-06	1.194E-19	8.440E-19
U-234	Pb-210+D1	1.339E-06	5.302E-22	7.941E-21
U-234	ΣDSR(j)		1.345E-10	1.348E-10
0U-235+D	U-235+D	1.000E+00	9.142E-05	9.168E-05
U-235+D	Pa-231	1.000E+00	2.582E-08	7.764E-08
U-235+D	Ac-227+D	1.000E+00	2.068E-10	1.438E-09
U-235	ΣDSR(j)		9.144E-05	9.176E-05
0U-238	U-238	5.450E-07	4.680E-11	4.691E-11
0U-238+D	U-238+D	1.000E+00	8.641E-05	8.662E-05
U-238+D	U-234	1.000E+00	1.418E-10	4.264E-10
U-238+D	Th-230	1.000E+00	4.665E-15	3.266E-14
U-238+D	Ra-226+D	1.000E+00	5.956E-20	1.802E-20
U-238+D	Pb-210+D	1.000E+00	8.651E-21	9.594E-21
U-238+D	Po-210	1.000E+00	3.437E-21	1.044E-21
U-238	ΣDSR(j)		8.641E-05	8.662E-05
0U-238+D	U-238+D	1.339E-06	1.157E-10	1.160E-10
U-238+D	U-234	1.339E-06	1.899E-16	5.709E-16
U-238+D	Th-230	1.339E-06	6.246E-21	4.377E-20
U-238+D	Ra-226+D	1.339E-06	1.061E-25	3.529E-25
U-238+D	Pb-210+D1	1.339E-06	8.424E-27	2.610E-27
U-238	ΣDSR(j)		1.157E-10	1.160E-10

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 44

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t= 0.000E+00	1.000E+00
U-234	2.489E+05	2.483E+05
U-235	2.734E+05	2.725E+05
U-238	2.893E+05	2.886E+05

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 2 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)

U-234	1.485E+01	2	1.008E-04	2.480E+05	1.008E-04	2.480E+05
U-235	9.550E-01	2	9.192E-05	2.720E+05	9.192E-05	2.720E+05
U-238	1.308E+01	2	8.673E-05	2.883E+05	8.673E-05	2.883E+05

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 45
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-234	1.000E+00	1.491E-03	1.495E-03
U-234	U-234	1.339E-06	1.997E-09	2.002E-09
U-234	U-238	1.000E+00	1.855E-09	5.577E-09
U-234	ΣDOSE(j):		1.491E-03	1.495E-03
0Th-230	U-234	1.000E+00	7.359E-08	2.212E-07
Th-230	U-238	1.000E+00	6.102E-14	4.271E-13
Th-230	ΣDOSE(j):		7.359E-08	2.212E-07
0Ra-226	U-234	1.000E+00	1.324E-12	9.360E-12
Ra-226	U-238	1.000E+00	7.790E-19	2.357E-19
Ra-226	ΣDOSE(j):		1.324E-12	9.360E-12
0Pb-210	U-234	1.000E+00	5.877E-15	8.808E-14
Pb-210	U-238	1.000E+00	1.132E-19	1.255E-19
Pb-210	ΣDOSE(j):		5.877E-15	8.808E-14
0Po-210	U-234	1.000E+00	1.622E-15	3.997E-14
Po-210	U-238	1.000E+00	4.496E-20	1.366E-20
Po-210	ΣDOSE(j):		1.622E-15	3.997E-14
0Th-230	U-234	1.339E-06	9.854E-14	2.962E-13
Th-230	U-238	1.339E-06	8.170E-20	5.725E-19
Th-230	ΣDOSE(j):		9.854E-14	2.962E-13
0Ra-226	U-234	1.339E-06	1.773E-18	1.253E-17
Ra-226	U-238	1.339E-06	1.388E-24	4.616E-24
Ra-226	ΣDOSE(j):		1.773E-18	1.253E-17
0Pb-210	U-234	1.339E-06	7.874E-21	1.179E-19
Pb-210	U-238	1.339E-06	1.102E-25	3.413E-26
Pb-210	ΣDOSE(j):		7.874E-21	1.179E-19
0U-235	U-235	1.000E+00	8.730E-05	8.755E-05
0Pa-231	U-235	1.000E+00	2.466E-08	7.414E-08
0Ac-227	U-235	1.000E+00	1.975E-10	1.373E-09
0U-238	U-238	5.450E-07	6.122E-10	6.136E-10
U-238	U-238	1.000E+00	1.130E-03	1.133E-03
U-238	ΣDOSE(j):		1.130E-03	1.133E-03
0U-238	U-238	1.339E-06	1.513E-09	1.517E-09

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 46
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	2.484E-15	7.468E-15

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-234	1.000E+00	1.485E+01	1.484E+01
U-234	U-234	1.339E-06	1.988E-05	1.988E-05
U-234	U-238	1.000E+00	0.000E+00	3.692E-05
U-234	ΣS(j):		1.485E+01	1.484E+01
0Th-230	U-234	1.000E+00	0.000E+00	1.365E-04
Th-230	U-238	1.000E+00	0.000E+00	1.698E-10
Th-230	ΣS(j):		0.000E+00	1.365E-04
0Ra-226	U-234	1.000E+00	0.000E+00	2.957E-08
Ra-226	U-238	1.000E+00	0.000E+00	2.219E-14
Ra-226	ΣS(j):		0.000E+00	2.957E-08
0Pb-210	U-234	1.000E+00	0.000E+00	3.053E-10
Pb-210	U-238	1.000E+00	0.000E+00	6.647E-14
Pb-210	ΣS(j):		0.000E+00	3.054E-10
0Po-210	U-234	1.000E+00	0.000E+00	1.010E-10
Po-210	U-238	1.000E+00	0.000E+00	8.724E-15
Po-210	ΣS(j):		0.000E+00	1.010E-10
0Th-230	U-234	1.339E-06	0.000E+00	1.828E-10
Th-230	U-238	1.339E-06	0.000E+00	2.272E-16
Th-230	ΣS(j):		0.000E+00	1.828E-10
0Ra-226	U-234	1.339E-06	0.000E+00	3.959E-14
Ra-226	U-238	1.339E-06	0.000E+00	1.639E-19
Ra-226	ΣS(j):		0.000E+00	3.959E-14
0Pb-210	U-234	1.339E-06	0.000E+00	4.089E-16
Pb-210	U-238	1.339E-06	0.000E+00	8.666E-21
Pb-210	ΣS(j):		0.000E+00	4.089E-16
0U-235	U-235	1.000E+00	9.550E-01	9.546E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.020E-05
0Ac-227	U-235	1.000E+00	0.000E+00	3.181E-07
0U-238	U-238	5.450E-07	7.129E-06	7.126E-06
U-238	U-238	1.000E+00	1.308E+01	1.308E+01

U-238 ES(j): 1.308E+01 1.308E+01
 0U-238 U-238 1.339E-06 1.751E-05 1.751E-05
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 48

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	0.000E+00	4.943E-11

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 49
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Run Time Information

ResOCalc.EXE execution began at 15:16 on 03/23/2023

ResOCalc.EXE execution ended at 15:16 on 03/23/2023

ResOCalc.EXE execution time 25.444 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years 2

Time = 1.000E+00 years 3

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.6E-13	2.0E-10	0.0E+00	9.8E-13	3.3E-14	2.2E-15	4.3E-16	2.0E-10
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.4E-12	2.5E-08	0.0E+00	1.0E-10	2.1E-11	9.4E-14	4.0E-14	2.5E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-19	4.6E-15	0.0E+00	1.2E-15	4.3E-17	3.9E-17	4.6E-19	5.9E-15
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.2E-21	9.6E-16	0.0E+00	5.5E-16	9.2E-17	2.1E-17	4.0E-19	1.6E-15
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-13	9.9E-13	0.0E+00	6.2E-14	2.3E-15	6.6E-15	2.6E-17	1.3E-12
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-14	7.3E-08	0.0E+00	3.1E-10	1.7E-12	2.8E-13	1.2E-13	7.4E-08
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-10	1.5E-03	0.0E+00	1.6E-05	2.4E-07	1.0E-06	4.6E-09	1.5E-03
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-07	8.5E-05	0.0E+00	9.5E-07	1.4E-08	6.3E-08	2.8E-10	8.7E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.9E-06	1.1E-03	0.0E+00	1.3E-05	2.0E-07	8.9E-07	3.9E-09	1.1E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-06	2.7E-03	0.0E+00	3.0E-05	4.5E-07	2.0E-06	8.8E-09	2.7E-03

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-12	1.4E-09	0.0E+00	6.8E-12	1.1E-13	1.5E-14	6.3E-15	1.4E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.5E-12	7.4E-08	0.0E+00	3.2E-10	6.8E-11	2.1E-13	2.8E-13	7.4E-08
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-17	6.9E-14	0.0E+00	1.7E-14	6.5E-16	5.8E-16	1.6E-17	8.8E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.0E-20	2.4E-14	0.0E+00	1.3E-14	2.5E-15	5.1E-16	1.3E-17	4.0E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-12	7.0E-12	0.0E+00	4.6E-13	1.9E-14	4.7E-14	3.9E-16	9.4E-12
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-13	2.2E-07	0.0E+00	9.3E-10	4.6E-12	6.3E-13	8.6E-13	2.2E-07
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-10	1.5E-03	0.0E+00	1.6E-05	2.4E-07	1.0E-06	1.4E-08	1.5E-03
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.5E-07	8.6E-05	0.0E+00	9.6E-07	1.5E-08	6.4E-08	8.4E-10	8.8E-05
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.0E-06	1.1E-03	0.0E+00	1.3E-05	2.1E-07	8.9E-07	1.2E-08	1.1E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.0E-06	2.7E-03	0.0E+00	3.0E-05	4.6E-07	2.0E-06	2.6E-08	2.7E-03

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
Time = 0.000E+00	4
Time = 1.000E+00	6

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)
DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)

DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

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T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)

Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water													
Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
		Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide		risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227		2.86E-19	0	6.48E-17	0	4.00E-19	0	1.35E-20	0	8.81E-22	0	1.76E-22	0	6.55E-17	0
Pa-231		1.91E-18	0	2.20E-15	0	1.32E-17	0	2.63E-18	0	1.20E-20	0	5.14E-21	0	2.22E-15	0
Pb-210		4.08E-25	0	3.57E-21	0	5.31E-22	0	1.96E-23	0	1.79E-23	0	2.14E-25	0	4.13E-21	0
Po-210		2.59E-27	0	8.82E-22	0	2.76E-22	0	4.61E-23	0	1.04E-23	0	1.99E-25	0	1.21E-21	0
Ra-226		2.09E-19	0	7.95E-19	0	3.06E-20	0	1.15E-21	0	3.25E-21	0	1.29E-23	0	1.04E-18	0
Th-230		3.17E-20	0	6.64E-15	0	4.66E-17	0	2.58E-19	0	4.26E-20	0	1.84E-20	0	6.69E-15	0
U-234		3.48E-16	0	1.18E-09	55	8.13E-12	0	1.24E-13	0	5.41E-13	0	2.40E-15	0	1.19E-09	55
U-235		7.10E-13	0	6.82E-11	3	5.35E-13	0	8.12E-15	0	3.55E-14	0	1.58E-16	0	6.95E-11	3
U-238		3.54E-12	0	8.84E-10	41	9.04E-12	0	1.37E-13	0	6.01E-13	0	2.67E-15	0	8.97E-10	42

Total	4.25E-12	0	2.13E-09	99	1.77E-11	1	2.69E-13	0	1.18E-12	0	5.23E-15	0	2.15E-09	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 5
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 0 years
 Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	3.49E-16	0	1.18E-09	55	0.00E+00	0	8.13E-12	0	1.24E-13	0	5.41E-13	0	2.40E-15	0	1.19E-09	55
U-235	7.10E-13	0	6.82E-11	3	0.00E+00	0	5.35E-13	0	8.13E-15	0	3.55E-14	0	1.58E-16	0	6.95E-11	3
U-238	3.54E-12	0	8.84E-10	41	0.00E+00	0	9.04E-12	0	1.37E-13	0	6.01E-13	0	2.67E-15	0	8.97E-10	42
Total	4.25E-12	0	2.13E-09	99	0.00E+00	0	1.77E-11	1	2.69E-13	0	1.18E-12	0	5.23E-15	0	2.15E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 6
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.07E-18	0	4.50E-16	0	2.79E-18	0	4.63E-20	0	6.16E-21	0	2.58E-21	0	4.55E-16	0
Pa-231	5.96E-18	0	6.61E-15	0	4.03E-17	0	8.72E-18	0	2.68E-20	0	3.58E-20	0	6.66E-15	0
Pb-210	6.45E-24	0	5.33E-20	0	8.05E-21	0	2.98E-22	0	2.66E-22	0	7.50E-24	0	6.19E-20	0
Po-210	6.38E-26	0	2.15E-20	0	6.75E-21	0	1.28E-21	0	2.54E-22	0	6.48E-24	0	2.98E-20	0
Ra-226	1.50E-18	0	5.57E-18	0	2.28E-19	0	9.28E-21	0	2.34E-20	0	1.93E-22	0	7.33E-18	0
Th-230	1.06E-19	0	2.00E-14	0	1.40E-16	0	6.89E-19	0	9.50E-20	0	1.29E-19	0	2.01E-14	0
U-234	6.23E-16	0	1.18E-09	55	8.17E-12	0	1.25E-13	0	5.44E-13	0	7.15E-15	0	1.19E-09	55
U-235	7.48E-13	0	6.83E-11	3	5.37E-13	0	8.24E-15	0	3.58E-14	0	4.70E-16	0	6.97E-11	3
U-238	3.66E-12	0	8.86E-10	41	9.09E-12	0	1.39E-13	0	6.05E-13	0	7.95E-15	0	8.99E-10	42
Total	4.41E-12	0	2.14E-09	99	1.78E-11	1	2.73E-13	0	1.19E-12	0	1.56E-14	0	2.16E-09	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 15:16 Page 7
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location A_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESA.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.25E-16	0	1.18E-09	55	0.00E+00	0	8.17E-12	0	1.25E-13	0	5.44E-13	0	7.15E-15	0	1.19E-09	55
U-235	7.48E-13	0	6.83E-11	3	0.00E+00	0	5.37E-13	0	8.25E-15	0	3.58E-14	0	4.70E-16	0	6.97E-11	3
U-238	3.66E-12	0	8.86E-10	41	0.00E+00	0	9.09E-12	0	1.39E-13	0	6.05E-13	0	7.95E-15	0	8.99E-10	42
Total	4.41E-12	0	2.14E-09	99	0.00E+00	0	1.78E-11	1	2.73E-13	0	1.19E-12	0	1.56E-14	0	2.16E-09	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Dose Conversion Factor (and Related) Parameter Summary

Current Library: DCFPAK3.02

Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)
DCSF	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT(11)
DCSF	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT(12)
DCSF	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT(13)
DCSF	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT(14)
DCSF	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT(15)
DCSF	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT(16)

DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:			
1	RESRAD-OFFSITE, Version 4.0	03/23/2023 16:03	Page 3	
	Parent Dose Report			
	Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3			
	File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF			

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D	6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231	8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D	2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1	2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210	1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D	3.528E-02	3.528E-02	DCF2 (6)
DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)

DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)
TF				
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF				

TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF				
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF				
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF				
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				
TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				

TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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Parent Dose Report
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File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)
TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210 , fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)

TF				
TF	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230 , fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234 , fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D , fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238 , fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D , fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
RELT	2nd release time (years)	1.000E+00		---	RelTime(2)
RELT	3rd release time (years)	2.000E+00		---	RelTime(3)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)
VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(8)

VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
0	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)

DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF(13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE(13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach(1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB(1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS(1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF(1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF(1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF(1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF(1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE(1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach(1,1)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB(2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS(2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF(2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF(2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF(2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF(2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE(2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach(1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB(3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS(3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF(3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF(3,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF(3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF(3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE(3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach(1,3)

DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)
DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach (1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBearing
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY (1)

LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-1.444E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-1.131E+02	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	3.761E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	4.081E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-1.417E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-1.104E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	4.178E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	4.498E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-2.750E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-1.750E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	4.359E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	5.359E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-1.667E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-6.670E+01	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	4.470E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	5.470E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-2.361E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.972E+02	6.562E+01	---	DWELLXY(2)

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File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	3.900E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	4.387E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T(2)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+00	---	T(3)
TIME	Times at which dose/risk are to be reported (yr)	not used	6.000E+00	---	T(4)

TIME	Times at which dose/risk are to be reported (yr)	not used	1.200E+01	---	T(5)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+01	---	T(6)
TIME	Times at which dose/risk are to be reported (yr)	not used	7.500E+01	---	T(7)
TIME	Times at which dose/risk are to be reported (yr)	not used	1.750E+02	---	T(8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T(9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T(10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	1.750E-02	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPRAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPRAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)
AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF(3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG(3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF(3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN(3)

AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB(3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY(3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP(3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG(3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC(3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF(3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO(4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN(4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF(4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG(4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF(4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN(4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB(4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY(4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP(4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG(4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC(4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF(4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX

AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,1)

AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ(4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ(1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ(1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ(1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ(1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ(1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ(2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ(2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ(2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ(2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ(2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ(3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ(3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ(3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)
AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)
AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				

AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ(2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ(2,2,5)

AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ(2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ(2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ(2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ(3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ(3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ(3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ(3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ(4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ(4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ(5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ(5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ(6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,5)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)

AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

1RESRAD-OFFSITE, Version 4.0

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ(6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,6)

AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ(1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ(1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ(1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ(1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ(1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ(2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ(2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ(2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ(3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ(3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ(4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ(5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ(5,4,7)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				

AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,8)

AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ(5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ(1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ(1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ(1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ(1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ(1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ(2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ(2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ(2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ(2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ(2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ(3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ(3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ(3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)

AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ (4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ (4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ (5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ (1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ (1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ (1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ (1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ (2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ (2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ (2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ (2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ (3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ (3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ (3,4,11)
AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ (3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,11)

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)

AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)

AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)
AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)

AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				

AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,15)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ (5,4,16)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	2.088E+02	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	2.548E+02	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
------	---	---	---	-----	--

0 = (total porosity + distribution coefficient*dry bulk density) / total porosity

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ(1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)

USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR (1)

WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)
LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI (1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI (1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI (2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI (2,2)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	1.750E-02	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	1.750E-02	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)
SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA(6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA(7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA(8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA(9)

SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA(10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA(11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA(12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	4.975E+01	1.325E+01	---	RAD_SHAPE(13)
SEXT	Outer annular radius (m), ring 14:	9.950E+01	2.650E+01	---	RAD_SHAPE(14)
SEXT	Outer annular radius (m), ring 15:	1.492E+02	3.975E+01	---	RAD_SHAPE(15)
SEXT	Outer annular radius (m), ring 16:	1.990E+02	5.300E+01	---	RAD_SHAPE(16)
SEXT	Outer annular radius (m), ring 17:	2.488E+02	6.625E+01	---	RAD_SHAPE(17)
SEXT	Outer annular radius (m), ring 18:	2.985E+02	7.950E+01	---	RAD_SHAPE(18)
SEXT	Outer annular radius (m), ring 19:	3.482E+02	9.275E+01	---	RAD_SHAPE(19)
SEXT	Outer annular radius (m), ring 20:	3.980E+02	1.060E+02	---	RAD_SHAPE(20)
SEXT	Outer annular radius (m), ring 21:	4.478E+02	1.192E+02	---	RAD_SHAPE(21)
SEXT	Outer annular radius (m), ring 22:	4.975E+02	1.325E+02	---	RAD_SHAPE(22)
SEXT	Outer annular radius (m), ring 23:	5.472E+02	1.458E+02	---	RAD_SHAPE(23)
SEXT	Outer annular radius (m), ring 24:	5.970E+02	1.590E+02	---	RAD_SHAPE(24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA(13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA(14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA(15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA(16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA(17)
SEXT	Ring 18	5.400E-05	2.400E-01	---	FRACA(18)
SEXT	Ring 19	2.500E-02	2.000E-01	---	FRACA(19)
SEXT	Ring 20	6.000E-02	1.700E-01	---	FRACA(20)
SEXT	Ring 21	8.500E-02	1.500E-01	---	FRACA(21)
SEXT	Ring 22	9.200E-02	1.300E-01	---	FRACA(22)
SEXT	Ring 23	4.800E-02	1.200E-01	---	FRACA(23)
SEXT	Ring 24	1.300E-02	5.200E-02	---	FRACA(24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	2.222E+02	2.222E+02	---	RAD_SHAPE(25)
SEXT	Outer annular radius (m), ring 26:	2.493E+02	2.493E+02	---	RAD_SHAPE(26)
SEXT	Outer annular radius (m), ring 27:	2.765E+02	2.765E+02	---	RAD_SHAPE(27)
SEXT	Outer annular radius (m), ring 28:	3.036E+02	3.036E+02	---	RAD_SHAPE(28)
SEXT	Outer annular radius (m), ring 29:	3.307E+02	3.307E+02	---	RAD_SHAPE(29)
SEXT	Outer annular radius (m), ring 30:	3.579E+02	3.579E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	3.850E+02	3.850E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	4.127E+02	4.127E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	4.392E+02	4.392E+02	---	RAD_SHAPE(33)

SEXT	Outer annular radius (m), ring 34:	4.658E+02	4.658E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	4.923E+02	4.923E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	5.188E+02	5.188E+02	---	RAD_SHAPE(36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.811E-02	1.811E-02	---	FRACA(26)
SEXT	Ring 27	4.738E-02	4.738E-02	---	FRACA(27)
SEXT	Ring 28	6.935E-02	6.935E-02	---	FRACA(28)
SEXT	Ring 29	8.669E-02	8.669E-02	---	FRACA(29)
SEXT	Ring 30	1.008E-01	1.008E-01	---	FRACA(30)
SEXT	Ring 31	1.126E-01	1.126E-01	---	FRACA(31)
SEXT	Ring 32	1.104E-01	1.104E-01	---	FRACA(32)
SEXT	Ring 33	8.431E-02	8.431E-02	---	FRACA(33)
SEXT	Ring 34	5.247E-02	5.247E-02	---	FRACA(34)
SEXT	Ring 35	2.833E-02	2.833E-02	---	FRACA(35)
SEXT	Ring 36	8.706E-03	8.706E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	2.560E+02	2.560E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	2.807E+02	2.807E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	3.053E+02	3.053E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	3.300E+02	3.300E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	3.547E+02	3.547E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	3.794E+02	3.794E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	4.040E+02	4.040E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	4.279E+02	4.279E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	4.517E+02	4.517E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	4.843E+02	4.843E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	5.168E+02	5.168E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	5.493E+02	5.493E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.564E-02	1.564E-02	---	FRACA(38)
SEXT	Ring 39	4.147E-02	4.147E-02	---	FRACA(39)
SEXT	Ring 40	6.123E-02	6.123E-02	---	FRACA(40)
SEXT	Ring 41	7.713E-02	7.713E-02	---	FRACA(41)
SEXT	Ring 42	9.034E-02	9.034E-02	---	FRACA(42)
SEXT	Ring 43	1.015E-01	1.015E-01	---	FRACA(43)
SEXT	Ring 44	1.015E-01	1.015E-01	---	FRACA(44)
SEXT	Ring 45	9.280E-02	9.280E-02	---	FRACA(45)
SEXT	Ring 46	6.843E-02	6.843E-02	---	FRACA(46)

SEXT	Ring 47	3.496E-02	3.496E-02	---	FRACA(47)
SEXT	Ring 48	1.047E-02	1.047E-02	---	FRACA(48)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	3.552E+02	3.552E+02	---	RAD_SHAPE(49)
SEXT	Outer annular radius (m), ring 50:	3.819E+02	3.819E+02	---	RAD_SHAPE(50)
SEXT	Outer annular radius (m), ring 51:	4.086E+02	4.086E+02	---	RAD_SHAPE(51)
SEXT	Outer annular radius (m), ring 52:	4.353E+02	4.353E+02	---	RAD_SHAPE(52)
SEXT	Outer annular radius (m), ring 53:	4.620E+02	4.620E+02	---	RAD_SHAPE(53)
SEXT	Outer annular radius (m), ring 54:	4.887E+02	4.887E+02	---	RAD_SHAPE(54)
SEXT	Outer annular radius (m), ring 55:	5.154E+02	5.154E+02	---	RAD_SHAPE(55)
SEXT	Outer annular radius (m), ring 56:	5.355E+02	5.355E+02	---	RAD_SHAPE(56)
SEXT	Outer annular radius (m), ring 57:	5.648E+02	5.648E+02	---	RAD_SHAPE(57)
SEXT	Outer annular radius (m), ring 58:	5.942E+02	5.942E+02	---	RAD_SHAPE(58)
SEXT	Outer annular radius (m), ring 59:	6.235E+02	6.235E+02	---	RAD_SHAPE(59)
SEXT	Outer annular radius (m), ring 60:	6.528E+02	6.528E+02	---	RAD_SHAPE(60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA(49)
SEXT	Ring 50	1.133E-02	1.133E-02	---	FRACA(50)
SEXT	Ring 51	3.112E-02	3.112E-02	---	FRACA(51)
SEXT	Ring 52	4.751E-02	4.751E-02	---	FRACA(52)
SEXT	Ring 53	6.140E-02	6.140E-02	---	FRACA(53)
SEXT	Ring 54	7.336E-02	7.336E-02	---	FRACA(54)
SEXT	Ring 55	8.381E-02	8.381E-02	---	FRACA(55)
SEXT	Ring 56	8.543E-02	8.543E-02	---	FRACA(56)
SEXT	Ring 57	6.845E-02	6.845E-02	---	FRACA(57)
SEXT	Ring 58	4.410E-02	4.410E-02	---	FRACA(58)
SEXT	Ring 59	2.428E-02	2.428E-02	---	FRACA(59)
SEXT	Ring 60	7.555E-03	7.555E-03	---	FRACA(60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	3.089E+02	3.089E+02	---	RAD_SHAPE(61)
SEXT	Outer annular radius (m), ring 62:	3.341E+02	3.341E+02	---	RAD_SHAPE(62)
SEXT	Outer annular radius (m), ring 63:	3.593E+02	3.593E+02	---	RAD_SHAPE(63)
SEXT	Outer annular radius (m), ring 64:	3.845E+02	3.845E+02	---	RAD_SHAPE(64)
SEXT	Outer annular radius (m), ring 65:	4.097E+02	4.097E+02	---	RAD_SHAPE(65)
SEXT	Outer annular radius (m), ring 66:	4.350E+02	4.350E+02	---	RAD_SHAPE(66)
SEXT	Outer annular radius (m), ring 67:	4.601E+02	4.601E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	4.853E+02	4.853E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	5.105E+02	5.105E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	5.388E+02	5.388E+02	---	RAD_SHAPE(70)

SEXT	Outer annular radius (m), ring 71:	5.670E+02	5.670E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	5.953E+02	5.953E+02	---	RAD_SHAPE(72)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 38

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.542E-02	1.542E-02	---	FRACA (62)
SEXT	Ring 63	4.064E-02	4.064E-02	---	FRACA (63)
SEXT	Ring 64	5.942E-02	5.942E-02	---	FRACA (64)
SEXT	Ring 65	7.447E-02	7.447E-02	---	FRACA (65)
SEXT	Ring 66	8.699E-02	8.699E-02	---	FRACA (66)
SEXT	Ring 67	8.885E-02	8.885E-02	---	FRACA (67)
SEXT	Ring 68	8.225E-02	8.225E-02	---	FRACA (68)
SEXT	Ring 69	7.671E-02	7.671E-02	---	FRACA (69)
SEXT	Ring 70	5.715E-02	5.715E-02	---	FRACA (70)
SEXT	Ring 71	2.925E-02	2.925E-02	---	FRACA (71)
SEXT	Ring 72	8.839E-03	8.839E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM

RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK (1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK (2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT (1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT (2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT (3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT (4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK (1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK (2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT (1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT (2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT (3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT (4)

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active

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1RESRAD-OFFSITE, Version 4.0          T½ Limit = 30 days          03/23/2023  16:03  Page  40
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File  : SHIPROCK ALTS 2 3 OFFSITE RESB.ROF
```

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

```

0
                                Total Dose TDOSE(t), mrem/yr
                                Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

```

```

t (years): 0.000E+00 1.000E+00
TDOSE(t): 1.467E-02 1.470E-02
M(t): 5.866E-04 5.879E-04
Maximum TDOSE(t): 1.471E-02 mrem/yr at t = 1.99 years
RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK ALTS 2 3 OFFSITE RESB.ROF

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[illegible][illegible]

U-234	7.04E-08	0	7.26E-03	49	0.00E+00	0	6.87E-05	0	9.77E-07	0	5.02E-06	0	2.38E-08	0	7.33E-03	50
U-235	2.14E-04	1	4.20E-04	3	0.00E+00	0	4.20E-06	0	5.98E-08	0	3.07E-07	0	1.46E-09	0	6.38E-04	4
U-238	1.16E-03	8	5.47E-03	37	0.00E+00	0	5.86E-05	0	8.34E-07	0	4.29E-06	0	2.03E-08	0	6.69E-03	46

Total	1.38E-03	9	1.31E-02	90	0.00E+00	0	1.31E-04	1	1.87E-06	0	9.61E-06	0	4.56E-08	0	1.47E-02	100
-------	----------	---	----------	----	----------	---	----------	---	----------	---	----------	---	----------	---	----------	-----

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	7.27E-08	0	7.28E-03	50	0.00E+00	0	6.90E-05	0	9.89E-07	0	5.05E-06	0	7.10E-08	0	7.35E-03	50
U-235	2.14E-04	1	4.22E-04	3	0.00E+00	0	4.22E-06	0	6.07E-08	0	3.09E-07	0	4.34E-09	0	6.40E-04	4
U-238	1.16E-03	8	5.48E-03	37	0.00E+00	0	5.89E-05	0	8.44E-07	0	4.31E-06	0	6.06E-08	0	6.71E-03	46
Total	1.38E-03	9	1.32E-02	90	0.00E+00	0	1.32E-04	1	1.89E-06	0	9.67E-06	0	1.36E-07	0	1.47E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent	Product	Thread	DSR(j,t) (mrem/yr)/(pCi/g)
(i)	(j)	Fraction	0.000E+00 1.000E+00
U-234	U-234	1.000E+00	4.938E-04 4.949E-04
U-234	Th-230	1.000E+00	2.438E-08 7.330E-08
U-234	Ra-226+D	1.000E+00	4.524E-12 3.170E-11

U-234	Pb-210+D	1.000E+00	1.918E-15	2.873E-14
U-234	Po-210	1.000E+00	5.138E-16	1.264E-14
U-234	ΣDSR(j)		4.938E-04	4.950E-04
0U-234	U-234	1.339E-06	6.612E-10	6.627E-10
U-234	Th-230	1.339E-06	3.265E-14	9.815E-14
U-234	Ra-226+D	1.339E-06	6.058E-18	4.244E-17
U-234	Pb-210+D1	1.339E-06	2.640E-21	3.951E-20
U-234	ΣDSR(j)		6.612E-10	6.628E-10
0U-235+D	U-235+D	1.000E+00	6.684E-04	6.697E-04
U-235+D	Pa-231	1.000E+00	1.276E-07	3.837E-07
U-235+D	Ac-227+D	1.000E+00	1.105E-09	7.680E-09
U-235	ΣDSR(j)		6.685E-04	6.701E-04
0U-238	U-238	5.450E-07	2.301E-10	2.307E-10
0U-238+D	U-238+D	1.000E+00	5.117E-04	5.128E-04
U-238+D	U-234	1.000E+00	6.973E-10	2.096E-09
U-238+D	Th-230	1.000E+00	2.295E-14	1.607E-13
U-238+D	Ra-226+D	1.000E+00	3.022E-18	2.150E-19
U-238+D	Pb-210+D	1.000E+00	4.211E-20	4.602E-20
U-238+D	Po-210	1.000E+00	1.619E-20	4.631E-21
U-238	ΣDSR(j)		5.117E-04	5.128E-04
0U-238+D	U-238+D	1.339E-06	6.852E-10	6.866E-10
U-238+D	U-234	1.339E-06	9.337E-16	2.807E-15
U-238+D	Th-230	1.339E-06	3.073E-20	2.154E-19
U-238+D	Ra-226+D	1.339E-06	5.412E-24	1.685E-23
U-238+D	Pb-210+D1	1.339E-06	4.214E-26	1.308E-26
U-238	ΣDSR(j)		6.852E-10	6.866E-10

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t= 0.000E+00	1.000E+00
U-234	5.063E+04	5.051E+04
U-235	3.740E+04	3.731E+04
U-238	4.885E+04	4.875E+04

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 1.99 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)

U-234	1.485E+01	1.99	4.956E-04	5.044E+04	4.956E-04	5.044E+04
U-235	9.550E-01	1.99	6.709E-04	3.727E+04	6.709E-04	3.727E+04
U-238	1.308E+01	1.99	5.133E-04	4.870E+04	5.133E-04	4.870E+04

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 45
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Thread Fraction Indicated
 ONuclide Parent THF(i) DOSE(j,t), mrem/yr
 (j) (i) t= 0.000E+00 1.000E+00

U-234	U-234	1.000E+00	7.333E-03	7.350E-03
U-234	U-234	1.339E-06	9.818E-09	9.841E-09
U-234	U-238	1.000E+00	9.121E-09	2.742E-08
U-234	ΣDOSE(j):		7.333E-03	7.350E-03
0Th-230	U-234	1.000E+00	3.621E-07	1.089E-06
Th-230	U-238	1.000E+00	3.002E-13	2.102E-12
Th-230	ΣDOSE(j):		3.621E-07	1.089E-06
0Ra-226	U-234	1.000E+00	6.719E-11	4.707E-10
Ra-226	U-238	1.000E+00	3.953E-17	2.812E-18
Ra-226	ΣDOSE(j):		6.719E-11	4.707E-10
0Pb-210	U-234	1.000E+00	2.849E-14	4.267E-13
Pb-210	U-238	1.000E+00	5.508E-19	6.020E-19
Pb-210	ΣDOSE(j):		2.849E-14	4.267E-13
0Po-210	U-234	1.000E+00	7.631E-15	1.877E-13
Po-210	U-238	1.000E+00	2.118E-19	6.057E-20
Po-210	ΣDOSE(j):		7.631E-15	1.877E-13
0Th-230	U-234	1.339E-06	4.849E-13	1.458E-12
Th-230	U-238	1.339E-06	4.020E-19	2.817E-18
Th-230	ΣDOSE(j):		4.849E-13	1.458E-12
0Ra-226	U-234	1.339E-06	8.997E-17	6.302E-16
Ra-226	U-238	1.339E-06	7.079E-23	2.205E-22
Ra-226	ΣDOSE(j):		8.997E-17	6.302E-16
0Pb-210	U-234	1.339E-06	3.921E-20	5.867E-19
Pb-210	U-238	1.339E-06	5.511E-25	1.711E-25
Pb-210	ΣDOSE(j):		3.921E-20	5.867E-19
0U-235	U-235	1.000E+00	6.383E-04	6.395E-04
0Pa-231	U-235	1.000E+00	1.219E-07	3.664E-07
0Ac-227	U-235	1.000E+00	1.055E-09	7.334E-09
0U-238	U-238	5.450E-07	3.010E-09	3.017E-09
U-238	U-238	1.000E+00	6.694E-03	6.707E-03
U-238	ΣDOSE(j):		6.694E-03	6.707E-03
0U-238	U-238	1.339E-06	8.963E-09	8.981E-09

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 46
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00 1.000E+00
U-234	U-238	1.339E-06	1.221E-14 3.672E-14

THF(i) is the thread fraction of the parent nuclide.

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00 1.000E+00
U-234	U-234	1.000E+00	1.485E+01 1.484E+01
U-234	U-234	1.339E-06	1.988E-05 1.988E-05
U-234	U-238	1.000E+00	0.000E+00 3.692E-05
U-234	ΣS(j):		1.485E+01 1.484E+01
0Th-230	U-234	1.000E+00	0.000E+00 1.365E-04
Th-230	U-238	1.000E+00	0.000E+00 1.698E-10
Th-230	ΣS(j):		0.000E+00 1.365E-04
0Ra-226	U-234	1.000E+00	0.000E+00 2.957E-08
Ra-226	U-238	1.000E+00	0.000E+00 2.219E-14
Ra-226	ΣS(j):		0.000E+00 2.957E-08
0Pb-210	U-234	1.000E+00	0.000E+00 3.053E-10
Pb-210	U-238	1.000E+00	0.000E+00 6.647E-14
Pb-210	ΣS(j):		0.000E+00 3.054E-10
0Po-210	U-234	1.000E+00	0.000E+00 1.010E-10
Po-210	U-238	1.000E+00	0.000E+00 8.724E-15
Po-210	ΣS(j):		0.000E+00 1.010E-10
0Th-230	U-234	1.339E-06	0.000E+00 1.828E-10
Th-230	U-238	1.339E-06	0.000E+00 2.272E-16
Th-230	ΣS(j):		0.000E+00 1.828E-10
0Ra-226	U-234	1.339E-06	0.000E+00 3.959E-14
Ra-226	U-238	1.339E-06	0.000E+00 1.639E-19
Ra-226	ΣS(j):		0.000E+00 3.959E-14
0Pb-210	U-234	1.339E-06	0.000E+00 4.089E-16
Pb-210	U-238	1.339E-06	0.000E+00 8.666E-21
Pb-210	ΣS(j):		0.000E+00 4.089E-16
0U-235	U-235	1.000E+00	9.550E-01 9.546E-01
0Pa-231	U-235	1.000E+00	0.000E+00 2.020E-05
0Ac-227	U-235	1.000E+00	0.000E+00 3.181E-07
0U-238	U-238	5.450E-07	7.129E-06 7.126E-06
U-238	U-238	1.000E+00	1.308E+01 1.308E+01

U-238 ES(j): 1.308E+01 1.308E+01
 0U-238 U-238 1.339E-06 1.751E-05 1.751E-05
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 48
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	0.000E+00	4.943E-11

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 49
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Run Time Information

ResOCalc.EXE execution began at 16:03 on 03/23/2023

ResOCalc.EXE execution ended at 16:04 on 03/23/2023

ResOCalc.EXE execution time 24.083 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years 2
 Time = 1.000E+00 years 3

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-11	9.7E-10	0.0E+00	4.3E-12	1.4E-13	1.0E-14	2.2E-15	1.1E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-10	1.2E-07	0.0E+00	4.6E-10	8.5E-11	4.6E-13	2.1E-13	1.2E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-16	2.3E-14	0.0E+00	5.1E-15	1.8E-16	1.9E-16	3.1E-18	2.8E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.7E-19	4.7E-15	0.0E+00	2.4E-15	3.8E-16	1.0E-16	3.1E-18	7.6E-15
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-11	4.9E-12	0.0E+00	2.7E-13	9.5E-15	3.2E-14	1.3E-16	6.7E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-12	3.6E-07	0.0E+00	1.4E-09	7.1E-12	1.4E-12	6.3E-13	3.6E-07
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-08	7.3E-03	0.0E+00	6.9E-05	9.8E-07	5.0E-06	2.4E-08	7.3E-03
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	4.2E-04	0.0E+00	4.2E-06	6.0E-08	3.1E-07	1.5E-09	6.4E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	5.5E-03	0.0E+00	5.9E-05	8.3E-07	4.3E-06	2.0E-08	6.7E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.3E-02	0.0E+00	1.3E-04	1.9E-06	9.6E-06	4.6E-08	1.5E-02

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.9E-10	6.7E-09	0.0E+00	3.0E-11	4.7E-13	7.3E-14	3.3E-14	7.3E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-09	3.6E-07	0.0E+00	1.4E-09	2.8E-10	1.0E-12	1.5E-12	3.7E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-15	3.4E-13	0.0E+00	7.7E-14	2.6E-15	2.8E-15	8.4E-17	4.3E-13
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-17	1.2E-13	0.0E+00	5.9E-14	1.0E-14	2.4E-15	6.8E-17	1.9E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-10	3.4E-11	0.0E+00	2.0E-12	7.6E-14	2.3E-13	2.0E-15	4.7E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-11	1.1E-06	0.0E+00	4.1E-09	1.9E-11	3.1E-12	4.4E-12	1.1E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.2E-08	7.3E-03	0.0E+00	6.9E-05	9.9E-07	5.1E-06	7.1E-08	7.3E-03
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-04	4.2E-04	0.0E+00	4.2E-06	6.0E-08	3.1E-07	4.3E-09	6.4E-04
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-03	5.5E-03	0.0E+00	5.9E-05	8.4E-07	4.3E-06	6.1E-08	6.7E-03
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	1.3E-02	0.0E+00	1.3E-04	1.9E-06	9.7E-06	1.4E-07	1.5E-02

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
Time = 0.000E+00	4
Time = 1.000E+00	6

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)
DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)

DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)

Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water													
Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	6.70E-17	0	3.19E-16	0	1.76E-18	0	5.58E-20	0	4.26E-21	0	9.08E-22	0	3.88E-16	0
Pa-231	4.51E-16	0	1.08E-14	0	5.81E-17	0	1.08E-17	0	5.80E-20	0	2.66E-20	0	1.13E-14	0
Pb-210	9.47E-23	0	1.76E-20	0	2.34E-21	0	8.07E-23	0	8.65E-23	0	1.41E-24	0	2.02E-20	0
Po-210	6.12E-25	0	4.35E-21	0	1.21E-21	0	1.89E-22	0	5.01E-23	0	1.54E-24	0	5.80E-21	0
Ra-226	4.98E-17	0	3.91E-18	0	1.35E-19	0	4.74E-21	0	1.57E-20	0	6.67E-23	0	5.38E-17	0
Th-230	7.06E-18	0	3.27E-14	0	2.05E-16	0	1.07E-18	0	2.06E-19	0	9.52E-20	0	3.29E-14	0
U-234	5.16E-14	0	5.80E-09	50	3.58E-11	0	5.09E-13	0	2.62E-12	0	1.24E-14	0	5.84E-09	50
U-235	1.68E-10	1	3.36E-10	3	2.35E-12	0	3.35E-14	0	1.72E-13	0	8.16E-16	0	5.06E-10	4
U-238	8.46E-10	7	4.35E-09	38	3.98E-11	0	5.66E-13	0	2.91E-12	0	1.38E-14	0	5.24E-09	45

Total	1.01E-09	9	1.05E-08	91	7.79E-11	1	1.11E-12	0	5.70E-12	0	2.70E-14	0	1.16E-08	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 5
Risk Report
Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years
Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.16E-14	0	5.80E-09	50	0.00E+00	0	3.58E-11	0	5.09E-13	0	2.62E-12	0	1.24E-14	0	5.84E-09	50
U-235	1.68E-10	1	3.36E-10	3	0.00E+00	0	2.35E-12	0	3.35E-14	0	1.72E-13	0	8.16E-16	0	5.06E-10	4
U-238	8.46E-10	7	4.35E-09	38	0.00E+00	0	3.98E-11	0	5.66E-13	0	2.91E-12	0	1.38E-14	0	5.24E-09	45
Total	1.01E-09	9	1.05E-08	91	0.00E+00	0	7.79E-11	1	1.11E-12	0	5.70E-12	0	2.70E-14	0	1.16E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 6
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	4.65E-16	0	2.22E-15	0	1.23E-17	0	1.90E-19	0	2.98E-20	0	1.34E-20	0	2.69E-15	0
Pa-231	1.35E-15	0	3.25E-14	0	1.77E-16	0	3.58E-17	0	1.30E-19	0	1.85E-19	0	3.41E-14	0
Pb-210	1.41E-21	0	2.62E-19	0	3.55E-20	0	1.22E-21	0	1.29E-21	0	3.86E-23	0	3.02E-19	0
Po-210	1.49E-23	0	1.06E-19	0	2.97E-20	0	5.25E-21	0	1.23E-21	0	3.40E-23	0	1.42E-19	0
Ra-226	3.49E-16	0	2.74E-17	0	1.01E-18	0	3.78E-20	0	1.13E-19	0	9.98E-22	0	3.77E-16	0
Th-230	2.12E-17	0	9.83E-14	0	6.16E-16	0	2.83E-18	0	4.59E-19	0	6.65E-19	0	9.89E-14	0
U-234	5.30E-14	0	5.82E-09	50	3.60E-11	0	5.15E-13	0	2.63E-12	0	3.70E-14	0	5.86E-09	50
U-235	1.68E-10	1	3.36E-10	3	2.36E-12	0	3.39E-14	0	1.73E-13	0	2.43E-15	0	5.07E-10	4
U-238	8.47E-10	7	4.36E-09	38	4.00E-11	0	5.73E-13	0	2.93E-12	0	4.11E-14	0	5.25E-09	45
Total	1.01E-09	9	1.05E-08	91	7.83E-11	1	1.12E-12	0	5.73E-12	0	8.06E-14	0	1.16E-08	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:03 Page 7
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location B_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESB.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.33E-14	0	5.82E-09	50	0.00E+00	0	3.60E-11	0	5.15E-13	0	2.63E-12	0	3.70E-14	0	5.86E-09	50
U-235	1.68E-10	1	3.36E-10	3	0.00E+00	0	2.36E-12	0	3.39E-14	0	1.73E-13	0	2.43E-15	0	5.07E-10	4
U-238	8.47E-10	7	4.36E-09	38	0.00E+00	0	4.00E-11	0	5.73E-13	0	2.93E-12	0	4.11E-14	0	5.25E-09	45
Total	1.01E-09	9	1.05E-08	91	0.00E+00	0	7.83E-11	1	1.12E-12	0	5.73E-12	0	8.06E-14	0	1.16E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Dose Conversion Factor (and Related) Parameter Summary

Current Library: DCFPAK3.02

Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)
DCSF	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT(11)
DCSF	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT(12)
DCSF	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT(13)
DCSF	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT(14)
DCSF	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT(15)
DCSF	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT(16)

DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Dose conversion factors for inhalation, mrem/pCi:			
	1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/23/2023 16:15	Page 3
		Parent Dose Report			
		Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3			
		File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF			

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

0	Menu	Parameter	Current Value	Default	Parameter Name
	DCSF	Ac-227+D	6.459E-01	6.459E-01	DCF2 (1)
	DCSF	Pa-231	8.505E-01	8.505E-01	DCF2 (2)
	DCSF	Pb-210+D	2.126E-02	2.126E-02	DCF2 (3)
	DCSF	Pb-210+D1	2.126E-02	2.126E-02	DCF2 (4)
	DCSF	Po-210	1.582E-02	1.582E-02	DCF2 (5)
	DCSF	Ra-226+D	3.528E-02	3.528E-02	DCF2 (6)
	DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
	DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
	DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
	DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
	DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)

DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

1RESRAD-OFFSITE, Version 4.0 T_{1/2} Limit = 30 days 03/23/2023 16:15 Page 4
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)
TF				
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF				

TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF				
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF				
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF				
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 5

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				
TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				

TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)
TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210 , fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)

TF				
TF	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230 , fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234 , fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D , fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238 , fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D , fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
RELT	2nd release time (years)	1.000E+00		---	RelTime(2)
RELT	3rd release time (years)	2.000E+00		---	RelTime(3)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)
VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(8)

VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
0					
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)

DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)

DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 10					
Parent Dose Report					
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3					
File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF					

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)
DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach (1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY (1)

LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-6.361E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-6.048E+02	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	8.726E+01	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	1.193E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-6.389E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-6.076E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	5.666E+01	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	8.870E+01	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-6.361E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-5.361E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	1.220E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	2.220E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-5.139E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-4.139E+02	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	9.430E+01	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	1.943E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-6.056E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-5.667E+02	6.562E+01	---	DWELLXY(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	5.940E+01	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	1.081E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T(2)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+00	---	T(3)
TIME	Times at which dose/risk are to be reported (yr)	not used	6.000E+00	---	T(4)

TIME	Times at which dose/risk are to be reported (yr)	not used	1.200E+01	---	T(5)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+01	---	T(6)
TIME	Times at which dose/risk are to be reported (yr)	not used	7.500E+01	---	T(7)
TIME	Times at which dose/risk are to be reported (yr)	not used	1.750E+02	---	T(8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T(9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T(10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	1.750E-02	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.003E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPRAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.003E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPRAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)
AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF(3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG(3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF(3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN(3)

AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB(3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY(3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP(3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG(3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC(3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF(3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO(4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN(4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF(4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG(4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF(4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN(4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB(4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY(4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP(4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG(4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC(4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF(4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX

AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,1)

AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ(4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ(1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ(1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ(1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ(1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ(1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ(2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ(2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ(2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ(2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ(2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ(3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ(3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ(3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)
AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)
AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				

AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ(2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ(2,2,5)

AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ(2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ(2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ(2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ(3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ(3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ(3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ(3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ(4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ(4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ(5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ(5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ(6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,5)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)

AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ(6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,6)

AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ(1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ(1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ(1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ(1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ(1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ(2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ(2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ(2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ(3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ(3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ(4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ(5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ(5,4,7)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				

AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,8)

AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ(5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ(1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ(1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ(1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ(1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ(1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ(2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ(2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ(2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ(2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ(2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ(3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ(3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ(3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)

AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ (4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ (4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ (5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ (5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ (5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ (6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ (6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ (6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ (1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ (1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ (1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ (1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ (2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ (2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ (2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ (2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ (3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ (3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ (3,4,11)
AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ (3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,11)

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)

AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)

AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)
AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)

AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				

AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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T_{1/2} Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,15)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ (6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ (6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ (6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ (6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ (1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ (1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ (1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ (1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ (1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ (1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ (2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ (2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ (2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ (2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ (2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ (2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ (3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ (3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ (3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ (3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ (3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ (3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ (4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ (4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ (4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ (4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ (4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ (4,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ (5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ (5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ (5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ (5,4,16)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-9.179E+01	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	6.494E+02	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
------	---	---	---	-----	--

0 = (total porosity + distribution coefficient*dry bulk density) / total porosity

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ(1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)

USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWLV (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWLV (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR (1)

WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)
LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI (1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI (1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI (2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI (2,2)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	1.750E-02	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	1.750E-02	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)
SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA(6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA(7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA(8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA(9)

SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA(10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA(11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA(12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	6.742E+01	1.325E+01	---	RAD_SHAPE(13)
SEXT	Outer annular radius (m), ring 14:	1.348E+02	2.650E+01	---	RAD_SHAPE(14)
SEXT	Outer annular radius (m), ring 15:	2.022E+02	3.975E+01	---	RAD_SHAPE(15)
SEXT	Outer annular radius (m), ring 16:	2.697E+02	5.300E+01	---	RAD_SHAPE(16)
SEXT	Outer annular radius (m), ring 17:	3.371E+02	6.625E+01	---	RAD_SHAPE(17)
SEXT	Outer annular radius (m), ring 18:	4.045E+02	7.950E+01	---	RAD_SHAPE(18)
SEXT	Outer annular radius (m), ring 19:	4.719E+02	9.275E+01	---	RAD_SHAPE(19)
SEXT	Outer annular radius (m), ring 20:	5.393E+02	1.060E+02	---	RAD_SHAPE(20)
SEXT	Outer annular radius (m), ring 21:	6.068E+02	1.192E+02	---	RAD_SHAPE(21)
SEXT	Outer annular radius (m), ring 22:	6.742E+02	1.325E+02	---	RAD_SHAPE(22)
SEXT	Outer annular radius (m), ring 23:	7.416E+02	1.458E+02	---	RAD_SHAPE(23)
SEXT	Outer annular radius (m), ring 24:	8.090E+02	1.590E+02	---	RAD_SHAPE(24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA(13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA(14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA(15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA(16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA(17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA(18)
SEXT	Ring 19	0.000E+00	2.000E-01	---	FRACA(19)
SEXT	Ring 20	0.000E+00	1.700E-01	---	FRACA(20)
SEXT	Ring 21	1.500E-02	1.500E-01	---	FRACA(21)
SEXT	Ring 22	5.300E-02	1.300E-01	---	FRACA(22)
SEXT	Ring 23	4.800E-02	1.200E-01	---	FRACA(23)
SEXT	Ring 24	3.800E-02	5.200E-02	---	FRACA(24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	6.204E+02	6.204E+02	---	RAD_SHAPE(25)
SEXT	Outer annular radius (m), ring 26:	6.290E+02	6.290E+02	---	RAD_SHAPE(26)
SEXT	Outer annular radius (m), ring 27:	6.297E+02	6.297E+02	---	RAD_SHAPE(27)
SEXT	Outer annular radius (m), ring 28:	6.585E+02	6.585E+02	---	RAD_SHAPE(28)
SEXT	Outer annular radius (m), ring 29:	6.874E+02	6.874E+02	---	RAD_SHAPE(29)
SEXT	Outer annular radius (m), ring 30:	7.162E+02	7.162E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	7.450E+02	7.450E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	7.738E+02	7.738E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	8.026E+02	8.026E+02	---	RAD_SHAPE(33)

SEXT	Outer annular radius (m), ring 34:	8.314E+02	8.314E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	8.378E+02	8.378E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	8.384E+02	8.384E+02	---	RAD_SHAPE(36)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 36

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	2.643E-02	2.643E-02	---	FRACA(26)
SEXT	Ring 27	5.304E-02	5.304E-02	---	FRACA(27)
SEXT	Ring 28	5.237E-02	5.237E-02	---	FRACA(28)
SEXT	Ring 29	5.011E-02	5.011E-02	---	FRACA(29)
SEXT	Ring 30	4.804E-02	4.804E-02	---	FRACA(30)
SEXT	Ring 31	4.613E-02	4.613E-02	---	FRACA(31)
SEXT	Ring 32	4.436E-02	4.436E-02	---	FRACA(32)
SEXT	Ring 33	4.273E-02	4.273E-02	---	FRACA(33)
SEXT	Ring 34	4.122E-02	4.122E-02	---	FRACA(34)
SEXT	Ring 35	2.060E-02	2.060E-02	---	FRACA(35)
SEXT	Ring 36	4.249E-04	4.249E-04	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	6.232E+02	6.232E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	6.275E+02	6.275E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	6.384E+02	6.384E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	6.664E+02	6.664E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	6.944E+02	6.944E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	7.223E+02	7.223E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	7.503E+02	7.503E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	7.783E+02	7.783E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	8.063E+02	8.063E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	8.343E+02	8.343E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	8.374E+02	8.374E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	8.456E+02	8.456E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.854E-02	1.854E-02	---	FRACA(38)
SEXT	Ring 39	4.500E-02	4.500E-02	---	FRACA(39)
SEXT	Ring 40	5.177E-02	5.177E-02	---	FRACA(40)
SEXT	Ring 41	4.962E-02	4.962E-02	---	FRACA(41)
SEXT	Ring 42	4.764E-02	4.764E-02	---	FRACA(42)
SEXT	Ring 43	4.581E-02	4.581E-02	---	FRACA(43)
SEXT	Ring 44	4.412E-02	4.412E-02	---	FRACA(44)
SEXT	Ring 45	4.255E-02	4.255E-02	---	FRACA(45)
SEXT	Ring 46	4.109E-02	4.109E-02	---	FRACA(46)

SEXT	Ring 47	2.646E-02	2.646E-02	---	FRACA(47)
SEXT	Ring 48	6.259E-03	6.259E-03	---	FRACA(48)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 37

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	5.861E+02	5.861E+02	---	RAD_SHAPE(49)
SEXT	Outer annular radius (m), ring 50:	5.874E+02	5.874E+02	---	RAD_SHAPE(50)
SEXT	Outer annular radius (m), ring 51:	6.108E+02	6.108E+02	---	RAD_SHAPE(51)
SEXT	Outer annular radius (m), ring 52:	6.374E+02	6.374E+02	---	RAD_SHAPE(52)
SEXT	Outer annular radius (m), ring 53:	6.640E+02	6.640E+02	---	RAD_SHAPE(53)
SEXT	Outer annular radius (m), ring 54:	6.907E+02	6.907E+02	---	RAD_SHAPE(54)
SEXT	Outer annular radius (m), ring 55:	7.173E+02	7.173E+02	---	RAD_SHAPE(55)
SEXT	Outer annular radius (m), ring 56:	7.439E+02	7.439E+02	---	RAD_SHAPE(56)
SEXT	Outer annular radius (m), ring 57:	7.705E+02	7.705E+02	---	RAD_SHAPE(57)
SEXT	Outer annular radius (m), ring 58:	7.971E+02	7.971E+02	---	RAD_SHAPE(58)
SEXT	Outer annular radius (m), ring 59:	7.981E+02	7.981E+02	---	RAD_SHAPE(59)
SEXT	Outer annular radius (m), ring 60:	8.154E+02	8.154E+02	---	RAD_SHAPE(60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA(49)
SEXT	Ring 50	1.059E-02	1.059E-02	---	FRACA(50)
SEXT	Ring 51	3.871E-02	3.871E-02	---	FRACA(51)
SEXT	Ring 52	5.439E-02	5.439E-02	---	FRACA(52)
SEXT	Ring 53	5.212E-02	5.212E-02	---	FRACA(53)
SEXT	Ring 54	5.003E-02	5.003E-02	---	FRACA(54)
SEXT	Ring 55	4.811E-02	4.811E-02	---	FRACA(55)
SEXT	Ring 56	4.633E-02	4.633E-02	---	FRACA(56)
SEXT	Ring 57	4.467E-02	4.467E-02	---	FRACA(57)
SEXT	Ring 58	4.314E-02	4.314E-02	---	FRACA(58)
SEXT	Ring 59	3.459E-02	3.459E-02	---	FRACA(59)
SEXT	Ring 60	1.325E-02	1.325E-02	---	FRACA(60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	4.639E+02	4.639E+02	---	RAD_SHAPE(61)
SEXT	Outer annular radius (m), ring 62:	4.687E+02	4.687E+02	---	RAD_SHAPE(62)
SEXT	Outer annular radius (m), ring 63:	4.858E+02	4.858E+02	---	RAD_SHAPE(63)
SEXT	Outer annular radius (m), ring 64:	5.128E+02	5.128E+02	---	RAD_SHAPE(64)
SEXT	Outer annular radius (m), ring 65:	5.398E+02	5.398E+02	---	RAD_SHAPE(65)
SEXT	Outer annular radius (m), ring 66:	5.669E+02	5.669E+02	---	RAD_SHAPE(66)
SEXT	Outer annular radius (m), ring 67:	5.939E+02	5.939E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	6.209E+02	6.209E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	6.479E+02	6.479E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	6.749E+02	6.749E+02	---	RAD_SHAPE(70)

SEXT	Outer annular radius (m), ring 71:	6.782E+02	6.782E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	6.902E+02	6.902E+02	---	RAD_SHAPE(72)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 38

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	2.284E-02	2.284E-02	---	FRACA (62)
SEXT	Ring 63	5.791E-02	5.791E-02	---	FRACA (63)
SEXT	Ring 64	6.798E-02	6.798E-02	---	FRACA (64)
SEXT	Ring 65	6.442E-02	6.442E-02	---	FRACA (65)
SEXT	Ring 66	6.122E-02	6.122E-02	---	FRACA (66)
SEXT	Ring 67	5.832E-02	5.832E-02	---	FRACA (67)
SEXT	Ring 68	5.569E-02	5.569E-02	---	FRACA (68)
SEXT	Ring 69	5.329E-02	5.329E-02	---	FRACA (69)
SEXT	Ring 70	5.108E-02	5.108E-02	---	FRACA (70)
SEXT	Ring 71	3.421E-02	3.421E-02	---	FRACA (71)
SEXT	Ring 72	9.143E-03	9.143E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM

RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK (1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK (2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT (1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT (2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT (3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT (4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK (1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK (2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT (1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT (2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT (3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT (4)

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active

```
1RESRAD-OFFSITE, Version 4.0          T½ Limit = 30 days          03/23/2023  16:15  Page  40
Parent Dose Report
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File  : SHIPROCK ALTS 2 3 OFFSITE RESC.ROF
```

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

```

0
                                Total Dose TDOSE(t), mrem/yr
                                Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

```

```

t (years): 0.000E+00 1.000E+00
TDOSE(t): 3.310E-02 3.318E-02
M(t): 1.324E-03 1.327E-03
OMaximum TDOSE(t): 3.323E-02 mrem/yr at t = 2 years
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK ALTS 2 3 OFFSITE RESC.ROF

```

[illegible][illegible]

U-234	5.58E-09	0	1.81E-02	55	0.00E+00	0	1.33E-04	0	3.65E-06	0	1.53E-05	0	5.78E-08	0	1.82E-02	55
U-235	1.02E-05	0	1.05E-03	3	0.00E+00	0	8.11E-06	0	2.23E-07	0	9.33E-07	0	3.53E-09	0	1.07E-03	3
U-238	5.49E-05	0	1.36E-02	41	0.00E+00	0	1.13E-04	0	3.11E-06	0	1.30E-05	0	4.93E-08	0	1.38E-02	42
Total	6.51E-05	0	3.27E-02	99	0.00E+00	0	2.54E-04	1	6.99E-06	0	2.92E-05	0	1.11E-07	0	3.31E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	1.03E-08	0	1.81E-02	55	0.00E+00	0	1.33E-04	0	3.70E-06	0	1.54E-05	0	1.72E-07	0	1.83E-02	55
U-235	1.08E-05	0	1.05E-03	3	0.00E+00	0	8.15E-06	0	2.27E-07	0	9.39E-07	0	1.05E-08	0	1.07E-03	3
U-238	5.70E-05	0	1.37E-02	41	0.00E+00	0	1.14E-04	0	3.16E-06	0	1.31E-05	0	1.47E-07	0	1.38E-02	42
Total	6.78E-05	0	3.28E-02	99	0.00E+00	0	2.55E-04	1	7.09E-06	0	2.94E-05	0	3.30E-07	0	3.32E-02	100

0*Sum of dose from all releases and from primary contamination.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 43

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent (i)	Product (j)	Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g) 0.000E+00 1.000E+00
U-234	U-234	1.000E+00	1.228E-03 1.230E-03
U-234	Th-230	1.000E+00	6.068E-08 1.824E-07
U-234	Ra-226+D	1.000E+00	1.063E-12 7.506E-12

U-234	Pb-210+D	1.000E+00	4.578E-15	6.853E-14
U-234	Po-210	1.000E+00	1.224E-15	3.023E-14
U-234	ΣDSR(j)		1.228E-03	1.231E-03
0U-234	U-234	1.339E-06	1.644E-09	1.648E-09
U-234	Th-230	1.339E-06	8.125E-14	2.443E-13
U-234	Ra-226+D	1.339E-06	1.423E-18	1.005E-17
U-234	Pb-210+D1	1.339E-06	6.131E-21	9.174E-20
U-234	ΣDSR(j)		1.644E-09	1.648E-09
0U-235+D	U-235+D	1.000E+00	1.116E-03	1.120E-03
U-235+D	Pa-231	1.000E+00	3.162E-07	9.508E-07
U-235+D	Ac-227+D	1.000E+00	2.532E-09	1.760E-08
U-235	ΣDSR(j)		1.117E-03	1.121E-03
0U-238	U-238	5.450E-07	5.720E-10	5.733E-10
0U-238+D	U-238+D	1.000E+00	1.055E-03	1.058E-03
U-238+D	U-234	1.000E+00	1.734E-09	5.212E-09
U-238+D	Th-230	1.000E+00	5.712E-14	3.999E-13
U-238+D	Ra-226+D	1.000E+00	7.110E-19	2.089E-19
U-238+D	Pb-210+D	1.000E+00	1.021E-19	1.084E-19
U-238+D	Po-210	1.000E+00	3.898E-20	1.116E-20
U-238	ΣDSR(j)		1.055E-03	1.058E-03
0U-238+D	U-238+D	1.339E-06	1.413E-09	1.417E-09
U-238+D	U-234	1.339E-06	2.321E-15	6.978E-15
U-238+D	Th-230	1.339E-06	7.648E-20	5.360E-19
U-238+D	Ra-226+D	1.339E-06	1.268E-24	4.194E-24
U-238+D	Pb-210+D1	1.339E-06	9.825E-26	2.885E-26
U-238	ΣDSR(j)		1.413E-09	1.417E-09

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 44

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t= 0.000E+00	1.000E+00
U-234	2.036E+04	2.032E+04
U-235	2.239E+04	2.231E+04
U-238	2.369E+04	2.363E+04

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 2 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)

U-234	1.485E+01	2	1.232E-03	2.029E+04	1.232E-03	2.029E+04
U-235	9.550E-01	2	1.122E-03	2.227E+04	1.122E-03	2.227E+04
U-238	1.308E+01	2	1.059E-03	2.360E+04	1.059E-03	2.360E+04

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 45
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Individual Nuclide Dose Summed Over All Pathways
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-234	1.000E+00	1.823E-02	1.827E-02
U-234	U-234	1.339E-06	2.441E-08	2.447E-08
U-234	U-238	1.000E+00	2.267E-08	6.817E-08
U-234	ΣDOSE(j):		1.823E-02	1.827E-02
0Th-230	U-234	1.000E+00	9.011E-07	2.709E-06
Th-230	U-238	1.000E+00	7.471E-13	5.230E-12
Th-230	ΣDOSE(j):		9.011E-07	2.709E-06
0Ra-226	U-234	1.000E+00	1.578E-11	1.115E-10
Ra-226	U-238	1.000E+00	9.300E-18	2.733E-18
Ra-226	ΣDOSE(j):		1.578E-11	1.115E-10
0Pb-210	U-234	1.000E+00	6.798E-14	1.018E-12
Pb-210	U-238	1.000E+00	1.336E-18	1.418E-18
Pb-210	ΣDOSE(j):		6.798E-14	1.018E-12
0Po-210	U-234	1.000E+00	1.817E-14	4.489E-13
Po-210	U-238	1.000E+00	5.098E-19	1.460E-19
Po-210	ΣDOSE(j):		1.817E-14	4.489E-13
0Th-230	U-234	1.339E-06	1.207E-12	3.627E-12
Th-230	U-238	1.339E-06	1.000E-18	7.010E-18
Th-230	ΣDOSE(j):		1.207E-12	3.627E-12
0Ra-226	U-234	1.339E-06	2.113E-17	1.492E-16
Ra-226	U-238	1.339E-06	1.659E-23	5.486E-23
Ra-226	ΣDOSE(j):		2.113E-17	1.492E-16
0Pb-210	U-234	1.339E-06	9.104E-20	1.362E-18
Pb-210	U-238	1.339E-06	1.285E-24	3.773E-25
Pb-210	ΣDOSE(j):		9.104E-20	1.362E-18
0U-235	U-235	1.000E+00	1.066E-03	1.069E-03
0Pa-231	U-235	1.000E+00	3.020E-07	9.080E-07
0Ac-227	U-235	1.000E+00	2.418E-09	1.681E-08
0U-238	U-238	5.450E-07	7.482E-09	7.499E-09
U-238	U-238	1.000E+00	1.380E-02	1.384E-02
U-238	ΣDOSE(j):		1.380E-02	1.384E-02
0U-238	U-238	1.339E-06	1.848E-08	1.853E-08

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 46
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00 1.000E+00
U-234	U-238	1.339E-06	3.036E-14 9.128E-14

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00 1.000E+00
U-234	U-234	1.000E+00	1.485E+01 1.484E+01
U-234	U-234	1.339E-06	1.988E-05 1.988E-05
U-234	U-238	1.000E+00	0.000E+00 3.692E-05
U-234	ΣS(j):		1.485E+01 1.484E+01
0Th-230	U-234	1.000E+00	0.000E+00 1.365E-04
Th-230	U-238	1.000E+00	0.000E+00 1.698E-10
Th-230	ΣS(j):		0.000E+00 1.365E-04
0Ra-226	U-234	1.000E+00	0.000E+00 2.957E-08
Ra-226	U-238	1.000E+00	0.000E+00 2.219E-14
Ra-226	ΣS(j):		0.000E+00 2.957E-08
0Pb-210	U-234	1.000E+00	0.000E+00 3.053E-10
Pb-210	U-238	1.000E+00	0.000E+00 6.647E-14
Pb-210	ΣS(j):		0.000E+00 3.054E-10
0Po-210	U-234	1.000E+00	0.000E+00 1.010E-10
Po-210	U-238	1.000E+00	0.000E+00 8.724E-15
Po-210	ΣS(j):		0.000E+00 1.010E-10
0Th-230	U-234	1.339E-06	0.000E+00 1.828E-10
Th-230	U-238	1.339E-06	0.000E+00 2.272E-16
Th-230	ΣS(j):		0.000E+00 1.828E-10
0Ra-226	U-234	1.339E-06	0.000E+00 3.959E-14
Ra-226	U-238	1.339E-06	0.000E+00 1.639E-19
Ra-226	ΣS(j):		0.000E+00 3.959E-14
0Pb-210	U-234	1.339E-06	0.000E+00 4.089E-16
Pb-210	U-238	1.339E-06	0.000E+00 8.666E-21
Pb-210	ΣS(j):		0.000E+00 4.089E-16
0U-235	U-235	1.000E+00	9.550E-01 9.546E-01
0Pa-231	U-235	1.000E+00	0.000E+00 2.020E-05
0Ac-227	U-235	1.000E+00	0.000E+00 3.181E-07
0U-238	U-238	5.450E-07	7.129E-06 7.126E-06
U-238	U-238	1.000E+00	1.308E+01 1.308E+01

U-238 ES(j): 1.308E+01 1.308E+01
 0U-238 U-238 1.339E-06 1.751E-05 1.751E-05
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 48
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	0.000E+00	4.943E-11

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 49
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Run Time Information

ResOCalc.EXE execution began at 16:15 on 03/23/2023

ResOCalc.EXE execution ended at 16:16 on 03/23/2023

ResOCalc.EXE execution time 22.924 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years 2
 Time = 1.000E+00 years 3

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.1E-12	2.4E-09	0.0E+00	8.4E-12	5.1E-13	3.2E-14	5.4E-15	2.4E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-11	3.0E-07	0.0E+00	8.8E-10	3.2E-10	1.4E-12	5.1E-13	3.0E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-18	5.7E-14	0.0E+00	9.8E-15	6.6E-16	5.7E-16	7.0E-18	6.8E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-20	1.2E-14	0.0E+00	4.7E-15	1.4E-15	3.0E-16	5.5E-18	1.8E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.9E-12	1.2E-11	0.0E+00	5.2E-13	3.6E-14	9.6E-14	3.3E-16	1.6E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.7E-13	9.0E-07	0.0E+00	2.6E-09	2.6E-11	4.2E-12	1.5E-12	9.0E-07
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.6E-09	1.8E-02	0.0E+00	1.3E-04	3.6E-06	1.5E-05	5.8E-08	1.8E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-05	1.0E-03	0.0E+00	8.1E-06	2.2E-07	9.3E-07	3.5E-09	1.1E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.5E-05	1.4E-02	0.0E+00	1.1E-04	3.1E-06	1.3E-05	4.9E-08	1.4E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-05	3.3E-02	0.0E+00	2.5E-04	7.0E-06	2.9E-05	1.1E-07	3.3E-02

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.0E-11	1.7E-08	0.0E+00	5.8E-11	1.8E-12	2.2E-13	8.0E-14	1.7E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-11	9.0E-07	0.0E+00	2.7E-09	1.1E-09	3.1E-12	3.5E-12	9.1E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-16	8.5E-13	0.0E+00	1.5E-13	1.0E-14	8.5E-15	2.1E-16	1.0E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-19	2.9E-13	0.0E+00	1.1E-13	3.9E-14	7.4E-15	1.7E-16	4.5E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-11	8.5E-11	0.0E+00	3.9E-12	2.9E-13	7.0E-13	4.9E-15	1.1E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-12	2.7E-06	0.0E+00	7.9E-09	7.0E-11	9.3E-12	1.1E-11	2.7E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-08	1.8E-02	0.0E+00	1.3E-04	3.7E-06	1.5E-05	1.7E-07	1.8E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-05	1.0E-03	0.0E+00	8.1E-06	2.3E-07	9.4E-07	1.1E-08	1.1E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-05	1.4E-02	0.0E+00	1.1E-04	3.2E-06	1.3E-05	1.5E-07	1.4E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-05	3.3E-02	0.0E+00	2.6E-04	7.1E-06	2.9E-05	3.3E-07	3.3E-02

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
Time = 0.000E+00	4
Time = 1.000E+00	6

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)
DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)

DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)

Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water													
Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
		Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide		risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227		3.24E-18	0	7.94E-16	0	3.40E-18	0	2.08E-19	0	1.30E-20	0	2.20E-21	0	8.01E-16	0
Pa-231		2.16E-17	0	2.70E-14	0	1.12E-16	0	4.05E-17	0	1.76E-19	0	6.46E-20	0	2.71E-14	0
Pb-210		4.66E-24	0	4.37E-20	0	4.51E-21	0	3.02E-22	0	2.63E-22	0	3.25E-24	0	4.88E-20	0
Po-210		2.93E-26	0	1.08E-20	0	2.34E-21	0	7.09E-22	0	1.52E-22	0	2.78E-24	0	1.40E-20	0
Ra-226		2.36E-18	0	9.74E-18	0	2.60E-19	0	1.77E-20	0	4.79E-20	0	1.62E-22	0	1.24E-17	0
Th-230		3.60E-19	0	8.14E-14	0	3.96E-16	0	3.97E-18	0	6.28E-19	0	2.31E-19	0	8.18E-14	0
U-234		4.09E-15	0	1.45E-08	55	6.92E-11	0	1.90E-12	0	7.96E-12	0	3.01E-14	0	1.45E-08	55
U-235		8.02E-12	0	8.36E-10	3	4.55E-12	0	1.25E-13	0	5.23E-13	0	1.98E-15	0	8.49E-10	3
U-238		4.00E-11	0	1.08E-08	41	7.69E-11	0	2.11E-12	0	8.85E-12	0	3.35E-14	0	1.10E-08	42

Total	4.80E-11	0	2.61E-08	99	1.51E-10	1	4.14E-12	0	1.73E-11	0	6.56E-14	0	2.63E-08	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 5
Risk Report
Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 0 years
Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	4.09E-15	0	1.45E-08	55	0.00E+00	0	6.92E-11	0	1.90E-12	0	7.96E-12	0	3.01E-14	0	1.45E-08	55
U-235	8.02E-12	0	8.36E-10	3	0.00E+00	0	4.55E-12	0	1.25E-13	0	5.23E-13	0	1.98E-15	0	8.49E-10	3
U-238	4.00E-11	0	1.08E-08	41	0.00E+00	0	7.69E-11	0	2.11E-12	0	8.85E-12	0	3.35E-14	0	1.10E-08	42
Total	4.80E-11	0	2.61E-08	99	0.00E+00	0	1.51E-10	1	4.14E-12	0	1.73E-11	0	6.56E-14	0	2.63E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 6
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	2.35E-17	0	5.52E-15	0	2.37E-17	0	7.13E-19	0	9.07E-20	0	3.24E-20	0	5.57E-15	0
Pa-231	6.76E-17	0	8.10E-14	0	3.43E-16	0	1.34E-16	0	3.95E-19	0	4.49E-19	0	8.16E-14	0
Pb-210	7.36E-23	0	6.53E-19	0	6.84E-20	0	4.59E-21	0	3.92E-21	0	9.47E-23	0	7.30E-19	0
Po-210	7.23E-25	0	2.64E-19	0	5.74E-20	0	1.97E-20	0	3.75E-21	0	8.42E-23	0	3.45E-19	0
Ra-226	1.70E-17	0	6.83E-17	0	1.93E-18	0	1.43E-19	0	3.45E-19	0	2.42E-21	0	8.77E-17	0
Th-230	1.22E-18	0	2.45E-13	0	1.19E-15	0	1.06E-17	0	1.40E-18	0	1.61E-18	0	2.46E-13	0
U-234	7.51E-15	0	1.45E-08	55	6.95E-11	0	1.93E-12	0	8.01E-12	0	8.98E-14	0	1.46E-08	55
U-235	8.49E-12	0	8.38E-10	3	4.57E-12	0	1.27E-13	0	5.27E-13	0	5.90E-15	0	8.51E-10	3
U-238	4.15E-11	0	1.09E-08	41	7.73E-11	0	2.15E-12	0	8.91E-12	0	9.98E-14	0	1.10E-08	42
Total	5.00E-11	0	2.62E-08	99	1.51E-10	1	4.20E-12	0	1.74E-11	0	1.95E-13	0	2.64E-08	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:15 Page 7
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location C_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESC.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	7.53E-15	0	1.45E-08	55	0.00E+00	0	6.95E-11	0	1.93E-12	0	8.01E-12	0	8.98E-14	0	1.46E-08	55
U-235	8.49E-12	0	8.38E-10	3	0.00E+00	0	4.57E-12	0	1.27E-13	0	5.27E-13	0	5.90E-15	0	8.52E-10	3
U-238	4.15E-11	0	1.09E-08	41	0.00E+00	0	7.73E-11	0	2.15E-12	0	8.91E-12	0	9.98E-14	0	1.10E-08	42
Total	5.00E-11	0	2.62E-08	99	0.00E+00	0	1.51E-10	1	4.20E-12	0	1.74E-11	0	1.95E-13	0	2.64E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Dose Conversion Factor (and Related) Parameter Summary

Current Library: DCFPAK3.02

Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)
DCSF	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT(11)
DCSF	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT(12)
DCSF	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT(13)
DCSF	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT(14)
DCSF	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT(15)
DCSF	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT(16)

DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:			
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	Parent Dose Report			
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	File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF			

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D	6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231	8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D	2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1	2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210	1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D	3.528E-02	3.528E-02	DCF2 (6)
DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)

DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)
TF				
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF				

TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF				
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF				
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF				
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				
TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				

TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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Parent Dose Report
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File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)
TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210 , fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)

TF				
TF	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230 , fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234 , fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D , fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238 , fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D , fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
RELT	2nd release time (years)	1.000E+00		---	RelTime(2)
RELT	3rd release time (years)	2.000E+00		---	RelTime(3)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)
VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(8)

VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
0					
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)

DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)

DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)
DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach (1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBearing
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY (1)

LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-5.028E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-4.715E+02	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	-1.433E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	-1.113E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-5.000E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-4.687E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	-1.739E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	-1.419E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-4.639E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-3.639E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	-1.224E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	-2.241E+01	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-4.667E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-3.667E+02	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	-2.196E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	-1.196E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-5.028E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-4.639E+02	6.562E+01	---	DWELLXY(2)

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File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	-1.100E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	-6.130E+01	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T(2)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+00	---	T(3)
TIME	Times at which dose/risk are to be reported (yr)	not used	6.000E+00	---	T(4)

TIME	Times at which dose/risk are to be reported (yr)	not used	1.200E+01	---	T(5)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+01	---	T(6)
TIME	Times at which dose/risk are to be reported (yr)	not used	7.500E+01	---	T(7)
TIME	Times at which dose/risk are to be reported (yr)	not used	1.750E+02	---	T(8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T(9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T(10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	1.750E-02	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPRAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPRAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	9.999E+03	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)
AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF(3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG(3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF(3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN(3)

AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB(3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY(3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP(3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG(3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC(3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF(3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO(4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN(4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF(4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG(4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF(4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN(4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB(4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY(4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP(4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG(4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC(4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF(4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.894E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX

AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,1)

AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ(4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ(1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ(1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ(1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ(1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ(1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ(2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ(2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ(2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ(2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ(2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ(3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ(3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ(3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,2)

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Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)
AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)
AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				

AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ(2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ(2,2,5)

AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ(2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ(2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ(2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ(3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ(3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ(3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ(3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ(4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ(4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ(5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ(5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ(6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,5)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)

AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ(6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,6)

AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ(1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ(1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ(1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ(1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ(1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ(2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ(2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ(2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ(3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ(3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ(4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ(5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ(5,4,7)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				

AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,8)

AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ(5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ(1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ(1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ(1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ(1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ(1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ(2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ(2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ(2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ(2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ(2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ(3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ(3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ(3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)

AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)
AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)

AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)

AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)
AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)

AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				

AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,15)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ(1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ(1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ(1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ(1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ(2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ(2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ(3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ(3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ(3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ(3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ(4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ(4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-1.000E+00	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	0.000E+00	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
------	---	---	---	-----	--

0 = (total porosity + distribution coefficient*dry bulk density) / total porosity

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ(1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)

USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWL (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWL (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR (1)

WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)
LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI (1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI (1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI (2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI (2,2)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	1.750E-02	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	1.750E-02	1.000E-04	---	MLTOTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	1.750E-02	1.000E-04	---	MLTOTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	1.750E-02	1.000E-04	---	MLTOTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	1.750E-02	1.000E-04	---	MLTOTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	1.750E-02	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)
SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA(6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA(7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA(8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA(9)

SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA(10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA(11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA(12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	6.308E+01	1.325E+01	---	RAD_SHAPE(13)
SEXT	Outer annular radius (m), ring 14:	1.262E+02	2.650E+01	---	RAD_SHAPE(14)
SEXT	Outer annular radius (m), ring 15:	1.892E+02	3.975E+01	---	RAD_SHAPE(15)
SEXT	Outer annular radius (m), ring 16:	2.523E+02	5.300E+01	---	RAD_SHAPE(16)
SEXT	Outer annular radius (m), ring 17:	3.154E+02	6.625E+01	---	RAD_SHAPE(17)
SEXT	Outer annular radius (m), ring 18:	3.785E+02	7.950E+01	---	RAD_SHAPE(18)
SEXT	Outer annular radius (m), ring 19:	4.416E+02	9.275E+01	---	RAD_SHAPE(19)
SEXT	Outer annular radius (m), ring 20:	5.047E+02	1.060E+02	---	RAD_SHAPE(20)
SEXT	Outer annular radius (m), ring 21:	5.678E+02	1.192E+02	---	RAD_SHAPE(21)
SEXT	Outer annular radius (m), ring 22:	6.308E+02	1.325E+02	---	RAD_SHAPE(22)
SEXT	Outer annular radius (m), ring 23:	6.939E+02	1.458E+02	---	RAD_SHAPE(23)
SEXT	Outer annular radius (m), ring 24:	7.570E+02	1.590E+02	---	RAD_SHAPE(24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA(13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA(14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA(15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA(16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA(17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA(18)
SEXT	Ring 19	0.000E+00	2.000E-01	---	FRACA(19)
SEXT	Ring 20	2.400E-03	1.700E-01	---	FRACA(20)
SEXT	Ring 21	4.500E-02	1.500E-01	---	FRACA(21)
SEXT	Ring 22	6.000E-02	1.300E-01	---	FRACA(22)
SEXT	Ring 23	5.300E-02	1.200E-01	---	FRACA(23)
SEXT	Ring 24	2.200E-02	5.200E-02	---	FRACA(24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	5.035E+02	5.035E+02	---	RAD_SHAPE(25)
SEXT	Outer annular radius (m), ring 26:	5.259E+02	5.259E+02	---	RAD_SHAPE(26)
SEXT	Outer annular radius (m), ring 27:	5.483E+02	5.483E+02	---	RAD_SHAPE(27)
SEXT	Outer annular radius (m), ring 28:	5.707E+02	5.707E+02	---	RAD_SHAPE(28)
SEXT	Outer annular radius (m), ring 29:	5.931E+02	5.931E+02	---	RAD_SHAPE(29)
SEXT	Outer annular radius (m), ring 30:	6.222E+02	6.222E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	6.514E+02	6.514E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	6.805E+02	6.805E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	7.097E+02	7.097E+02	---	RAD_SHAPE(33)

SEXT	Outer annular radius (m), ring 34:	7.317E+02	7.317E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	7.538E+02	7.538E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	7.758E+02	7.758E+02	---	RAD_SHAPE(36)

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Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.153E-02	1.153E-02	---	FRACA(26)
SEXT	Ring 27	3.075E-02	3.075E-02	---	FRACA(27)
SEXT	Ring 28	4.513E-02	4.513E-02	---	FRACA(28)
SEXT	Ring 29	5.689E-02	5.689E-02	---	FRACA(29)
SEXT	Ring 30	6.039E-02	6.039E-02	---	FRACA(30)
SEXT	Ring 31	5.712E-02	5.712E-02	---	FRACA(31)
SEXT	Ring 32	5.420E-02	5.420E-02	---	FRACA(32)
SEXT	Ring 33	5.159E-02	5.159E-02	---	FRACA(33)
SEXT	Ring 34	3.907E-02	3.907E-02	---	FRACA(34)
SEXT	Ring 35	2.022E-02	2.022E-02	---	FRACA(35)
SEXT	Ring 36	6.192E-03	6.192E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	5.094E+02	5.094E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	5.343E+02	5.343E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	5.591E+02	5.591E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	5.840E+02	5.840E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	6.088E+02	6.088E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	6.349E+02	6.349E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	6.609E+02	6.609E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	6.870E+02	6.870E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	7.131E+02	7.131E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	7.378E+02	7.378E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	7.624E+02	7.624E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	7.871E+02	7.871E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	1.106E-02	1.106E-02	---	FRACA(38)
SEXT	Ring 39	2.984E-02	2.984E-02	---	FRACA(39)
SEXT	Ring 40	4.438E-02	4.438E-02	---	FRACA(40)
SEXT	Ring 41	5.642E-02	5.642E-02	---	FRACA(41)
SEXT	Ring 42	6.023E-02	6.023E-02	---	FRACA(42)
SEXT	Ring 43	5.723E-02	5.723E-02	---	FRACA(43)
SEXT	Ring 44	5.455E-02	5.455E-02	---	FRACA(44)
SEXT	Ring 45	5.213E-02	5.213E-02	---	FRACA(45)
SEXT	Ring 46	3.987E-02	3.987E-02	---	FRACA(46)

SEXT	Ring 47	2.098E-02	2.098E-02	---	FRACA(47)
SEXT	Ring 48	6.450E-03	6.450E-03	---	FRACA(48)

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Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	4.202E+02	4.202E+02	---	RAD_SHAPE(49)
SEXT	Outer annular radius (m), ring 50:	4.473E+02	4.473E+02	---	RAD_SHAPE(50)
SEXT	Outer annular radius (m), ring 51:	4.745E+02	4.745E+02	---	RAD_SHAPE(51)
SEXT	Outer annular radius (m), ring 52:	5.016E+02	5.016E+02	---	RAD_SHAPE(52)
SEXT	Outer annular radius (m), ring 53:	5.229E+02	5.229E+02	---	RAD_SHAPE(53)
SEXT	Outer annular radius (m), ring 54:	5.441E+02	5.441E+02	---	RAD_SHAPE(54)
SEXT	Outer annular radius (m), ring 55:	5.654E+02	5.654E+02	---	RAD_SHAPE(55)
SEXT	Outer annular radius (m), ring 56:	5.866E+02	5.866E+02	---	RAD_SHAPE(56)
SEXT	Outer annular radius (m), ring 57:	6.078E+02	6.078E+02	---	RAD_SHAPE(57)
SEXT	Outer annular radius (m), ring 58:	6.291E+02	6.291E+02	---	RAD_SHAPE(58)
SEXT	Outer annular radius (m), ring 59:	6.576E+02	6.576E+02	---	RAD_SHAPE(59)
SEXT	Outer annular radius (m), ring 60:	6.862E+02	6.862E+02	---	RAD_SHAPE(60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA(49)
SEXT	Ring 50	1.859E-02	1.859E-02	---	FRACA(50)
SEXT	Ring 51	4.679E-02	4.679E-02	---	FRACA(51)
SEXT	Ring 52	6.493E-02	6.493E-02	---	FRACA(52)
SEXT	Ring 53	7.075E-02	7.075E-02	---	FRACA(53)
SEXT	Ring 54	6.747E-02	6.747E-02	---	FRACA(54)
SEXT	Ring 55	6.451E-02	6.451E-02	---	FRACA(55)
SEXT	Ring 56	6.182E-02	6.182E-02	---	FRACA(56)
SEXT	Ring 57	5.935E-02	5.935E-02	---	FRACA(57)
SEXT	Ring 58	5.709E-02	5.709E-02	---	FRACA(58)
SEXT	Ring 59	3.786E-02	3.786E-02	---	FRACA(59)
SEXT	Ring 60	1.003E-02	1.003E-02	---	FRACA(60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	4.499E+02	4.499E+02	---	RAD_SHAPE(61)
SEXT	Outer annular radius (m), ring 62:	4.785E+02	4.785E+02	---	RAD_SHAPE(62)
SEXT	Outer annular radius (m), ring 63:	5.071E+02	5.071E+02	---	RAD_SHAPE(63)
SEXT	Outer annular radius (m), ring 64:	5.357E+02	5.357E+02	---	RAD_SHAPE(64)
SEXT	Outer annular radius (m), ring 65:	5.644E+02	5.644E+02	---	RAD_SHAPE(65)
SEXT	Outer annular radius (m), ring 66:	5.858E+02	5.858E+02	---	RAD_SHAPE(66)
SEXT	Outer annular radius (m), ring 67:	6.073E+02	6.073E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	6.287E+02	6.287E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	6.502E+02	6.502E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	6.782E+02	6.782E+02	---	RAD_SHAPE(70)

SEXT	Outer annular radius (m), ring 71:	7.061E+02	7.061E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	7.341E+02	7.341E+02	---	RAD_SHAPE(72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.244E-02	1.244E-02	---	FRACA (62)
SEXT	Ring 63	3.345E-02	3.345E-02	---	FRACA (63)
SEXT	Ring 64	4.977E-02	4.977E-02	---	FRACA (64)
SEXT	Ring 65	6.322E-02	6.322E-02	---	FRACA (65)
SEXT	Ring 66	6.748E-02	6.748E-02	---	FRACA (66)
SEXT	Ring 67	6.425E-02	6.425E-02	---	FRACA (67)
SEXT	Ring 68	6.136E-02	6.136E-02	---	FRACA (68)
SEXT	Ring 69	5.875E-02	5.875E-02	---	FRACA (69)
SEXT	Ring 70	4.503E-02	4.503E-02	---	FRACA (70)
SEXT	Ring 71	2.378E-02	2.378E-02	---	FRACA (71)
SEXT	Ring 72	7.295E-03	7.295E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM

RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 39

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK (1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK (2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT (1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT (2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT (3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT (4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK (1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK (2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT (1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT (2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT (3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT (4)

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active

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1RESRAD-OFFSITE, Version 4.0          T½ Limit = 30 days          03/23/2023  16:28  Page  40
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
File  : SHIPROCK ALTS 2 3 OFFSITE RESD.ROF
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0
                                Total Dose TDOSE(t), mrem/yr
                                Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

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t (years): 0.000E+00 1.000E+00
TDOSE(t): 3.499E-02 3.507E-02
M(t): 1.399E-03 1.403E-03
Maximum TDOSE(t): 3.512E-02 mrem/yr at t = 2 years
RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK ALTS 2 3 OFFSITE RESD.ROF

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[illegible][illegible]

U-234	1.62E-08	0	1.90E-02	54	0.00E+00	0	1.36E-04	0	4.32E-06	0	2.20E-05	0	6.01E-08	0	1.92E-02	55
U-235	4.25E-05	0	1.10E-03	3	0.00E+00	0	8.29E-06	0	2.64E-07	0	1.34E-06	0	3.67E-09	0	1.15E-03	3
U-238	2.31E-04	1	1.43E-02	41	0.00E+00	0	1.16E-04	0	3.69E-06	0	1.88E-05	0	5.13E-08	0	1.47E-02	42
Total	2.73E-04	1	3.44E-02	98	0.00E+00	0	2.60E-04	1	8.28E-06	0	4.21E-05	0	1.15E-07	0	3.50E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

From releases to ground water and to surface water																
Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)																
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	2.12E-08	0	1.90E-02	54	0.00E+00	0	1.36E-04	0	4.38E-06	0	2.21E-05	0	1.79E-07	0	1.92E-02	55
U-235	4.32E-05	0	1.10E-03	3	0.00E+00	0	8.33E-06	0	2.69E-07	0	1.35E-06	0	1.10E-08	0	1.16E-03	3
U-238	2.33E-04	1	1.43E-02	41	0.00E+00	0	1.16E-04	0	3.73E-06	0	1.89E-05	0	1.53E-07	0	1.47E-02	42
Total	2.76E-04	1	3.45E-02	98	0.00E+00	0	2.61E-04	1	8.38E-06	0	4.24E-05	0	3.43E-07	0	3.51E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent	Product	Thread	DSR(j,t) (mrem/yr)/(pCi/g)			
(i)	(j)	Fraction	0.000E+00	1.000E+00		
U-234	U-234	1.000E+00	1.290E-03	1.293E-03		
U-234	Th-230	1.000E+00	6.375E-08	1.916E-07		
U-234	Ra-226+D	1.000E+00	1.740E-12	1.225E-11		

U-234	Pb-210+D	1.000E+00	4.814E-15	7.204E-14
U-234	Po-210	1.000E+00	1.297E-15	3.208E-14
U-234	ΣDSR(j)		1.290E-03	1.293E-03
0U-234	U-234	1.339E-06	1.727E-09	1.731E-09
U-234	Th-230	1.339E-06	8.536E-14	2.566E-13
U-234	Ra-226+D	1.339E-06	2.330E-18	1.641E-17
U-234	Pb-210+D1	1.339E-06	6.457E-21	9.661E-20
U-234	ΣDSR(j)		1.727E-09	1.731E-09
0U-235+D	U-235+D	1.000E+00	1.206E-03	1.210E-03
U-235+D	Pa-231	1.000E+00	3.323E-07	9.992E-07
U-235+D	Ac-227+D	1.000E+00	2.673E-09	1.858E-08
U-235	ΣDSR(j)		1.207E-03	1.211E-03
0U-238	U-238	5.450E-07	6.010E-10	6.024E-10
0U-238+D	U-238+D	1.000E+00	1.122E-03	1.125E-03
U-238+D	U-234	1.000E+00	1.821E-09	5.476E-09
U-238+D	Th-230	1.000E+00	6.000E-14	4.201E-13
U-238+D	Ra-226+D	1.000E+00	1.163E-18	2.309E-19
U-238+D	Pb-210+D	1.000E+00	1.076E-19	1.136E-19
U-238+D	Po-210	1.000E+00	4.132E-20	1.162E-20
U-238	ΣDSR(j)		1.122E-03	1.125E-03
0U-238+D	U-238+D	1.339E-06	1.503E-09	1.506E-09
U-238+D	U-234	1.339E-06	2.439E-15	7.332E-15
U-238+D	Th-230	1.339E-06	8.034E-20	5.630E-19
U-238+D	Ra-226+D	1.339E-06	2.076E-24	6.715E-24
U-238+D	Pb-210+D1	1.339E-06	1.034E-25	3.056E-26
U-238	ΣDSR(j)		1.503E-09	1.506E-09

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t= 0.000E+00	1.000E+00
U-234	1.938E+04	1.933E+04
U-235	2.072E+04	2.065E+04
U-238	2.228E+04	2.222E+04

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 2 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)

U-234	1.485E+01	2	1.295E-03	1.931E+04	1.295E-03	1.931E+04
U-235	9.550E-01	1.99	1.213E-03	2.061E+04	1.213E-03	2.061E+04
U-238	1.308E+01	2	1.126E-03	2.220E+04	1.126E-03	2.220E+04

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 45
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated
 0Nuclide Parent THF(i) DOSE(j,t), mrem/yr
 (j) (i) t= 0.000E+00 1.000E+00

U-234	U-234	1.000E+00	1.915E-02	1.920E-02
U-234	U-234	1.339E-06	2.565E-08	2.571E-08
U-234	U-238	1.000E+00	2.383E-08	7.163E-08
U-234	ΣDOSE(j):		1.915E-02	1.920E-02
0Th-230	U-234	1.000E+00	9.467E-07	2.846E-06
Th-230	U-238	1.000E+00	7.849E-13	5.494E-12
Th-230	ΣDOSE(j):		9.467E-07	2.846E-06
0Ra-226	U-234	1.000E+00	2.584E-11	1.819E-10
Ra-226	U-238	1.000E+00	1.522E-17	3.020E-18
Ra-226	ΣDOSE(j):		2.584E-11	1.819E-10
0Pb-210	U-234	1.000E+00	7.148E-14	1.070E-12
Pb-210	U-238	1.000E+00	1.407E-18	1.486E-18
Pb-210	ΣDOSE(j):		7.148E-14	1.070E-12
0Po-210	U-234	1.000E+00	1.926E-14	4.763E-13
Po-210	U-238	1.000E+00	5.405E-19	1.520E-19
Po-210	ΣDOSE(j):		1.926E-14	4.763E-13
0Th-230	U-234	1.339E-06	1.268E-12	3.811E-12
Th-230	U-238	1.339E-06	1.051E-18	7.364E-18
Th-230	ΣDOSE(j):		1.268E-12	3.811E-12
0Ra-226	U-234	1.339E-06	3.460E-17	2.436E-16
Ra-226	U-238	1.339E-06	2.716E-23	8.784E-23
Ra-226	ΣDOSE(j):		3.460E-17	2.436E-16
0Pb-210	U-234	1.339E-06	9.589E-20	1.435E-18
Pb-210	U-238	1.339E-06	1.353E-24	3.998E-25
Pb-210	ΣDOSE(j):		9.589E-20	1.435E-18
0U-235	U-235	1.000E+00	1.152E-03	1.155E-03
0Pa-231	U-235	1.000E+00	3.174E-07	9.543E-07
0Ac-227	U-235	1.000E+00	2.553E-09	1.774E-08
0U-238	U-238	5.450E-07	7.861E-09	7.879E-09
U-238	U-238	1.000E+00	1.468E-02	1.471E-02
U-238	ΣDOSE(j):		1.468E-02	1.471E-02
0U-238	U-238	1.339E-06	1.965E-18	1.970E-08

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 46
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	3.190E-14	9.591E-14

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00
U-234	U-234	1.000E+00	1.485E+01	1.484E+01
U-234	U-234	1.339E-06	1.988E-05	1.988E-05
U-234	U-238	1.000E+00	0.000E+00	3.692E-05
U-234	ΣS(j):		1.485E+01	1.484E+01
0Th-230	U-234	1.000E+00	0.000E+00	1.365E-04
Th-230	U-238	1.000E+00	0.000E+00	1.698E-10
Th-230	ΣS(j):		0.000E+00	1.365E-04
0Ra-226	U-234	1.000E+00	0.000E+00	2.957E-08
Ra-226	U-238	1.000E+00	0.000E+00	2.219E-14
Ra-226	ΣS(j):		0.000E+00	2.957E-08
0Pb-210	U-234	1.000E+00	0.000E+00	3.053E-10
Pb-210	U-238	1.000E+00	0.000E+00	6.647E-14
Pb-210	ΣS(j):		0.000E+00	3.054E-10
0Po-210	U-234	1.000E+00	0.000E+00	1.010E-10
Po-210	U-238	1.000E+00	0.000E+00	8.724E-15
Po-210	ΣS(j):		0.000E+00	1.010E-10
0Th-230	U-234	1.339E-06	0.000E+00	1.828E-10
Th-230	U-238	1.339E-06	0.000E+00	2.272E-16
Th-230	ΣS(j):		0.000E+00	1.828E-10
0Ra-226	U-234	1.339E-06	0.000E+00	3.959E-14
Ra-226	U-238	1.339E-06	0.000E+00	1.639E-19
Ra-226	ΣS(j):		0.000E+00	3.959E-14
0Pb-210	U-234	1.339E-06	0.000E+00	4.089E-16
Pb-210	U-238	1.339E-06	0.000E+00	8.666E-21
Pb-210	ΣS(j):		0.000E+00	4.089E-16
0U-235	U-235	1.000E+00	9.550E-01	9.546E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.020E-05
0Ac-227	U-235	1.000E+00	0.000E+00	3.181E-07
0U-238	U-238	5.450E-07	7.129E-06	7.126E-06
U-238	U-238	1.000E+00	1.308E+01	1.308E+01

U-238 ES(j): 1.308E+01 1.308E+01
 0U-238 U-238 1.339E-06 1.751E-05 1.751E-05
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 48

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	0.000E+00	4.943E-11

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 49

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Run Time Information

ResOCalc.EXE execution began at 16:28 on 03/23/2023

ResOCalc.EXE execution ended at 16:28 on 03/23/2023

ResOCalc.EXE execution time 23.842 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years 2
 Time = 1.000E+00 years 3

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-11	2.5E-09	0.0E+00	8.5E-12	6.1E-13	4.6E-14	5.6E-15	2.6E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-10	3.2E-07	0.0E+00	9.0E-10	3.8E-10	2.0E-12	5.3E-13	3.2E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-17	6.0E-14	0.0E+00	1.0E-14	7.7E-16	8.2E-16	8.4E-18	7.1E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-19	1.2E-14	0.0E+00	4.8E-15	1.7E-15	4.4E-16	5.9E-18	1.9E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-11	1.3E-11	0.0E+00	5.3E-13	4.2E-14	1.4E-13	3.4E-16	2.6E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-12	9.4E-07	0.0E+00	2.7E-09	3.1E-11	6.0E-12	1.6E-12	9.5E-07
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-08	1.9E-02	0.0E+00	1.4E-04	4.3E-06	2.2E-05	6.0E-08	1.9E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05	1.1E-03	0.0E+00	8.3E-06	2.6E-07	1.3E-06	3.7E-09	1.2E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	1.4E-02	0.0E+00	1.2E-04	3.7E-06	1.9E-05	5.1E-08	1.5E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.7E-04	3.4E-02	0.0E+00	2.6E-04	8.3E-06	4.2E-05	1.2E-07	3.5E-02

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.2E-10	1.8E-08	0.0E+00	5.9E-11	2.1E-12	3.2E-13	8.3E-14	1.8E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-10	9.5E-07	0.0E+00	2.7E-09	1.2E-09	4.5E-12	3.7E-12	9.5E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.7E-16	8.9E-13	0.0E+00	1.5E-13	1.2E-14	1.2E-14	2.2E-16	1.1E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.7E-18	3.0E-13	0.0E+00	1.2E-13	4.6E-14	1.1E-14	1.8E-16	4.8E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-11	9.0E-11	0.0E+00	4.0E-12	3.4E-13	1.0E-12	5.1E-15	1.8E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.8E-12	2.8E-06	0.0E+00	8.1E-09	8.3E-11	1.3E-11	1.1E-11	2.8E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-08	1.9E-02	0.0E+00	1.4E-04	4.4E-06	2.2E-05	1.8E-07	1.9E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.3E-05	1.1E-03	0.0E+00	8.3E-06	2.7E-07	1.4E-06	1.1E-08	1.2E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	1.4E-02	0.0E+00	1.2E-04	3.7E-06	1.9E-05	1.5E-07	1.5E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.8E-04	3.4E-02	0.0E+00	2.6E-04	8.4E-06	4.2E-05	3.4E-07	3.5E-02

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
Time = 0.000E+00	4
Time = 1.000E+00	6

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)
DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)

DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)

Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 4

Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water															
Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

0	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
0	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	1.34E-17	0	8.34E-16	0	3.47E-18	0	2.47E-19	0	1.87E-20	0	2.29E-21	0	8.51E-16	0
Pa-231	8.98E-17	0	2.83E-14	0	1.15E-16	0	4.80E-17	0	2.54E-19	0	6.72E-20	0	2.86E-14	0
Pb-210	1.90E-23	0	4.59E-20	0	4.61E-21	0	3.57E-22	0	3.79E-22	0	3.85E-24	0	5.13E-20	0
Po-210	1.22E-25	0	1.14E-20	0	2.40E-21	0	8.38E-22	0	2.19E-22	0	2.98E-24	0	1.48E-20	0
Ra-226	9.90E-18	0	1.02E-17	0	2.65E-19	0	2.09E-20	0	6.89E-20	0	1.69E-22	0	2.05E-17	0
Th-230	1.43E-18	0	8.56E-14	0	4.05E-16	0	4.71E-18	0	9.04E-19	0	2.40E-19	0	8.60E-14	0
U-234	1.19E-14	0	1.52E-08	55	7.07E-11	0	2.25E-12	0	1.15E-11	0	3.13E-14	0	1.53E-08	55
U-235	3.35E-11	0	8.78E-10	3	4.65E-12	0	1.48E-13	0	7.53E-13	0	2.06E-15	0	9.17E-10	3
U-238	1.68E-10	1	1.14E-08	41	7.86E-11	0	2.50E-12	0	1.27E-11	0	3.48E-14	0	1.16E-08	42

Total	2.02E-10	1	2.74E-08	99	1.54E-10	1	4.90E-12	0	2.49E-11	0	6.82E-14	0	2.78E-08	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 5
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 0 years
 Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.19E-14	0	1.52E-08	55	0.00E+00	0	7.07E-11	0	2.25E-12	0	1.15E-11	0	3.13E-14	0	1.53E-08	55
U-235	3.35E-11	0	8.78E-10	3	0.00E+00	0	4.65E-12	0	1.48E-13	0	7.53E-13	0	2.06E-15	0	9.17E-10	3
U-238	1.68E-10	1	1.14E-08	41	0.00E+00	0	7.86E-11	0	2.50E-12	0	1.27E-11	0	3.48E-14	0	1.16E-08	42
Total	2.02E-10	1	2.74E-08	99	0.00E+00	0	1.54E-10	1	4.90E-12	0	2.49E-11	0	6.82E-14	0	2.78E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:28 Page 6
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	9.39E-17	0	5.80E-15	0	2.42E-17	0	8.41E-19	0	1.31E-19	0	3.37E-20	0	5.92E-15	0
Pa-231	2.72E-16	0	8.51E-14	0	3.50E-16	0	1.58E-16	0	5.67E-19	0	4.67E-19	0	8.59E-14	0
Pb-210	2.87E-22	0	6.86E-19	0	6.99E-20	0	5.39E-21	0	5.63E-21	0	9.95E-23	0	7.67E-19	0
Po-210	2.99E-24	0	2.78E-19	0	5.86E-20	0	2.32E-20	0	5.39E-21	0	8.83E-23	0	3.65E-19	0
Ra-226	6.98E-17	0	7.18E-17	0	1.97E-18	0	1.67E-19	0	4.96E-19	0	2.52E-21	0	1.44E-16	0
Th-230	4.43E-18	0	2.57E-13	0	1.22E-15	0	1.25E-17	0	2.01E-18	0	1.68E-18	0	2.58E-13	0
U-234	1.54E-14	0	1.52E-08	55	7.10E-11	0	2.28E-12	0	1.15E-11	0	9.34E-14	0	1.53E-08	55
U-235	3.40E-11	0	8.80E-10	3	4.67E-12	0	1.50E-13	0	7.58E-13	0	6.14E-15	0	9.20E-10	3
U-238	1.70E-10	1	1.14E-08	41	7.90E-11	0	2.53E-12	0	1.28E-11	0	1.04E-13	0	1.17E-08	42
Total	2.04E-10	1	2.75E-08	99	1.55E-10	1	4.96E-12	0	2.51E-11	0	2.03E-13	0	2.79E-08	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
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 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location D_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESD.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	1.55E-14	0	1.52E-08	55	0.00E+00	0	7.10E-11	0	2.28E-12	0	1.15E-11	0	9.34E-14	0	1.53E-08	55
U-235	3.40E-11	0	8.80E-10	3	0.00E+00	0	4.67E-12	0	1.50E-13	0	7.58E-13	0	6.14E-15	0	9.20E-10	3
U-238	1.70E-10	1	1.14E-08	41	0.00E+00	0	7.90E-11	0	2.53E-12	0	1.28E-11	0	1.04E-13	0	1.17E-08	42
Total	2.04E-10	1	2.75E-08	99	0.00E+00	0	1.55E-10	1	4.96E-12	0	2.51E-11	0	2.03E-13	0	2.79E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Dose Conversion Factor (and Related) Parameter Summary

Current Library: DCFPAK3.02

Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)
DCSF	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT(11)
DCSF	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT(12)
DCSF	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT(13)
DCSF	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT(14)
DCSF	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT(15)
DCSF	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT(16)

DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:			
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/23/2023 16:42	Page 3
	Parent Dose Report			
	Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3			
	File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF			

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D	6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231	8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D	2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1	2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210	1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D	3.528E-02	3.528E-02	DCF2 (6)
DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)

DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 4
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)
TF				
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF				

TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF				
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF				
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF				
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				
TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				

TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)
TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210 , fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)

TF				
TF	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230 , fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234 , fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D , fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238 , fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D , fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
RELT	2nd release time (years)	1.000E+00		---	RelTime(2)
RELT	3rd release time (years)	2.000E+00		---	RelTime(3)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)
VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(8)

VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 8

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
0					
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)

DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)

DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)
1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 10					
Parent Dose Report					
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3					
File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF					

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)
DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach (1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY (1)

LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	-1.278E+02	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	-9.650E+01	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	-1.989E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	-1.669E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	-1.333E+02	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	-1.020E+02	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	-1.600E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	-1.280E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	-1.972E+02	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	-9.720E+01	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	-3.280E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	-2.280E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-2.778E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-1.778E+02	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	-4.280E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	-3.280E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-1.806E+02	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.445E+02	6.562E+01	---	DWELLXY(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	-1.517E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	-1.030E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T(2)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+00	---	T(3)
TIME	Times at which dose/risk are to be reported (yr)	not used	6.000E+00	---	T(4)

TIME	Times at which dose/risk are to be reported (yr)	not used	1.200E+01	---	T(5)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+01	---	T(6)
TIME	Times at which dose/risk are to be reported (yr)	not used	7.500E+01	---	T(7)
TIME	Times at which dose/risk are to be reported (yr)	not used	1.750E+02	---	T(8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T(9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T(10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	1.750E-02	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPRAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPRAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	1.000E+04	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)
AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF(3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG(3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF(3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN(3)

AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB(3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY(3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP(3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG(3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC(3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF(3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO(4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN(4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF(4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG(4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF(4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN(4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB(4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY(4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP(4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG(4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC(4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF(4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.758E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX

AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,1)

AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ(4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ(1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ(1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ(1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ(1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ(1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ(2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ(2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ(2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ(2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ(2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ(3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ(3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ(3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)
AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)
AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				

AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ(2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ(2,2,5)

AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ(2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ(2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ(2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ(3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ(3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ(3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ(3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ(4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ(4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ(5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ(5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ(6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,5)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)

AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ(6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,6)

AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ(1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ(1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ(1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ(1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ(1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ(2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ(2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ(2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ(3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ(3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ(4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ(5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ(5,4,7)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				

AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,8)

AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ(5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ(1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ(1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ(1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ(1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ(1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ(2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ(2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ(2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ(2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ(2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ(3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ(3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ(3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)

AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)
AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)

AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)

AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)
AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)

AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				

AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,15)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ(1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ(1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ(1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ(1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ(2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ(2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ(3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ(3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ(3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ(3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ(4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ(4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-1.000E+00	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	0.000E+00	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
------	---	---	---	-----	--

0 = (total porosity + distribution coefficient*dry bulk density) / total porosity

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0		User		RESRAD	Parameter
Menu	Parameter	Input	Default	computed	Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ(1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)

USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWL (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWL (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR (1)

WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)
LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI (1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI (1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI (2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI (2,2)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	1.750E-02	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	1.750E-02	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)
SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA(6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA(7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA(8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA(9)

SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA(10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA(11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA(12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	4.217E+01	1.325E+01	---	RAD_SHAPE(13)
SEXT	Outer annular radius (m), ring 14:	8.433E+01	2.650E+01	---	RAD_SHAPE(14)
SEXT	Outer annular radius (m), ring 15:	1.265E+02	3.975E+01	---	RAD_SHAPE(15)
SEXT	Outer annular radius (m), ring 16:	1.687E+02	5.300E+01	---	RAD_SHAPE(16)
SEXT	Outer annular radius (m), ring 17:	2.108E+02	6.625E+01	---	RAD_SHAPE(17)
SEXT	Outer annular radius (m), ring 18:	2.530E+02	7.950E+01	---	RAD_SHAPE(18)
SEXT	Outer annular radius (m), ring 19:	2.952E+02	9.275E+01	---	RAD_SHAPE(19)
SEXT	Outer annular radius (m), ring 20:	3.373E+02	1.060E+02	---	RAD_SHAPE(20)
SEXT	Outer annular radius (m), ring 21:	3.795E+02	1.192E+02	---	RAD_SHAPE(21)
SEXT	Outer annular radius (m), ring 22:	4.217E+02	1.325E+02	---	RAD_SHAPE(22)
SEXT	Outer annular radius (m), ring 23:	4.638E+02	1.458E+02	---	RAD_SHAPE(23)
SEXT	Outer annular radius (m), ring 24:	5.060E+02	1.590E+02	---	RAD_SHAPE(24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA(13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA(14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA(15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA(16)
SEXT	Ring 17	3.700E-04	1.900E-01	---	FRACA(17)
SEXT	Ring 18	3.300E-02	2.400E-01	---	FRACA(18)
SEXT	Ring 19	7.200E-02	2.000E-01	---	FRACA(19)
SEXT	Ring 20	9.800E-02	1.700E-01	---	FRACA(20)
SEXT	Ring 21	1.200E-01	1.500E-01	---	FRACA(21)
SEXT	Ring 22	1.000E-01	1.300E-01	---	FRACA(22)
SEXT	Ring 23	4.900E-02	1.200E-01	---	FRACA(23)
SEXT	Ring 24	1.400E-02	5.200E-02	---	FRACA(24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	2.145E+02	2.145E+02	---	RAD_SHAPE(25)
SEXT	Outer annular radius (m), ring 26:	2.407E+02	2.407E+02	---	RAD_SHAPE(26)
SEXT	Outer annular radius (m), ring 27:	2.668E+02	2.668E+02	---	RAD_SHAPE(27)
SEXT	Outer annular radius (m), ring 28:	2.929E+02	2.929E+02	---	RAD_SHAPE(28)
SEXT	Outer annular radius (m), ring 29:	3.191E+02	3.191E+02	---	RAD_SHAPE(29)
SEXT	Outer annular radius (m), ring 30:	3.452E+02	3.452E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	3.713E+02	3.713E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	4.096E+02	4.096E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	4.345E+02	4.345E+02	---	RAD_SHAPE(33)

SEXT	Outer annular radius (m), ring 34:	4.595E+02	4.595E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	4.845E+02	4.845E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	5.095E+02	5.095E+02	---	RAD_SHAPE(36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	1.875E-02	1.875E-02	---	FRACA(26)
SEXT	Ring 27	4.875E-02	4.875E-02	---	FRACA(27)
SEXT	Ring 28	7.090E-02	7.090E-02	---	FRACA(28)
SEXT	Ring 29	8.824E-02	8.824E-02	---	FRACA(29)
SEXT	Ring 30	1.023E-01	1.023E-01	---	FRACA(30)
SEXT	Ring 31	1.140E-01	1.140E-01	---	FRACA(31)
SEXT	Ring 32	1.094E-01	1.094E-01	---	FRACA(32)
SEXT	Ring 33	8.178E-02	8.178E-02	---	FRACA(33)
SEXT	Ring 34	5.069E-02	5.069E-02	---	FRACA(34)
SEXT	Ring 35	2.738E-02	2.738E-02	---	FRACA(35)
SEXT	Ring 36	8.425E-03	8.425E-03	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	1.860E+02	1.860E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	2.148E+02	2.148E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	2.436E+02	2.436E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	2.724E+02	2.724E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	3.012E+02	3.012E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	3.300E+02	3.300E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	3.588E+02	3.588E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	3.740E+02	3.740E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	4.014E+02	4.014E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	4.289E+02	4.289E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	4.563E+02	4.563E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	4.838E+02	4.838E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	2.185E-02	2.185E-02	---	FRACA(38)
SEXT	Ring 39	5.582E-02	5.582E-02	---	FRACA(39)
SEXT	Ring 40	8.027E-02	8.027E-02	---	FRACA(40)
SEXT	Ring 41	9.894E-02	9.894E-02	---	FRACA(41)
SEXT	Ring 42	1.138E-01	1.138E-01	---	FRACA(42)
SEXT	Ring 43	1.258E-01	1.258E-01	---	FRACA(43)
SEXT	Ring 44	1.254E-01	1.254E-01	---	FRACA(44)
SEXT	Ring 45	9.683E-02	9.683E-02	---	FRACA(45)
SEXT	Ring 46	5.922E-02	5.922E-02	---	FRACA(46)

SEXT	Ring 47	3.162E-02	3.162E-02	---	FRACA(47)
SEXT	Ring 48	9.634E-03	9.634E-03	---	FRACA(48)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 37

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	3.146E+02	3.146E+02	---	RAD_SHAPE(49)
SEXT	Outer annular radius (m), ring 50:	3.423E+02	3.423E+02	---	RAD_SHAPE(50)
SEXT	Outer annular radius (m), ring 51:	3.701E+02	3.701E+02	---	RAD_SHAPE(51)
SEXT	Outer annular radius (m), ring 52:	3.979E+02	3.979E+02	---	RAD_SHAPE(52)
SEXT	Outer annular radius (m), ring 53:	4.257E+02	4.257E+02	---	RAD_SHAPE(53)
SEXT	Outer annular radius (m), ring 54:	4.534E+02	4.534E+02	---	RAD_SHAPE(54)
SEXT	Outer annular radius (m), ring 55:	4.820E+02	4.820E+02	---	RAD_SHAPE(55)
SEXT	Outer annular radius (m), ring 56:	5.107E+02	5.107E+02	---	RAD_SHAPE(56)
SEXT	Outer annular radius (m), ring 57:	5.345E+02	5.345E+02	---	RAD_SHAPE(57)
SEXT	Outer annular radius (m), ring 58:	5.584E+02	5.584E+02	---	RAD_SHAPE(58)
SEXT	Outer annular radius (m), ring 59:	5.823E+02	5.823E+02	---	RAD_SHAPE(59)
SEXT	Outer annular radius (m), ring 60:	6.062E+02	6.062E+02	---	RAD_SHAPE(60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA(49)
SEXT	Ring 50	1.482E-02	1.482E-02	---	FRACA(50)
SEXT	Ring 51	3.946E-02	3.946E-02	---	FRACA(51)
SEXT	Ring 52	5.842E-02	5.842E-02	---	FRACA(52)
SEXT	Ring 53	7.378E-02	7.378E-02	---	FRACA(53)
SEXT	Ring 54	8.662E-02	8.662E-02	---	FRACA(54)
SEXT	Ring 55	8.800E-02	8.800E-02	---	FRACA(55)
SEXT	Ring 56	8.046E-02	8.046E-02	---	FRACA(56)
SEXT	Ring 57	6.364E-02	6.364E-02	---	FRACA(57)
SEXT	Ring 58	4.045E-02	4.045E-02	---	FRACA(58)
SEXT	Ring 59	2.220E-02	2.220E-02	---	FRACA(59)
SEXT	Ring 60	6.916E-03	6.916E-03	---	FRACA(60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	4.413E+02	4.413E+02	---	RAD_SHAPE(61)
SEXT	Outer annular radius (m), ring 62:	4.689E+02	4.689E+02	---	RAD_SHAPE(62)
SEXT	Outer annular radius (m), ring 63:	4.965E+02	4.965E+02	---	RAD_SHAPE(63)
SEXT	Outer annular radius (m), ring 64:	5.240E+02	5.240E+02	---	RAD_SHAPE(64)
SEXT	Outer annular radius (m), ring 65:	5.516E+02	5.516E+02	---	RAD_SHAPE(65)
SEXT	Outer annular radius (m), ring 66:	5.792E+02	5.792E+02	---	RAD_SHAPE(66)
SEXT	Outer annular radius (m), ring 67:	6.053E+02	6.053E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	6.315E+02	6.315E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	6.573E+02	6.573E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	6.830E+02	6.830E+02	---	RAD_SHAPE(70)

SEXT	Outer annular radius (m), ring 71:	7.087E+02	7.087E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	7.345E+02	7.345E+02	---	RAD_SHAPE(72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	1.032E-02	1.032E-02	---	FRACA (62)
SEXT	Ring 63	2.845E-02	2.845E-02	---	FRACA (63)
SEXT	Ring 64	4.348E-02	4.348E-02	---	FRACA (64)
SEXT	Ring 65	5.629E-02	5.629E-02	---	FRACA (65)
SEXT	Ring 66	6.741E-02	6.741E-02	---	FRACA (66)
SEXT	Ring 67	7.001E-02	7.001E-02	---	FRACA (67)
SEXT	Ring 68	6.554E-02	6.554E-02	---	FRACA (68)
SEXT	Ring 69	5.314E-02	5.314E-02	---	FRACA (69)
SEXT	Ring 70	3.470E-02	3.470E-02	---	FRACA (70)
SEXT	Ring 71	1.934E-02	1.934E-02	---	FRACA (71)
SEXT	Ring 72	6.083E-03	6.083E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM

RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK (1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK (2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT (1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT (2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT (3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT (4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK (1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK (2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT (1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT (2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT (3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT (4)

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active

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1RESRAD-OFFSITE, Version 4.0          T½ Limit = 30 days          03/23/2023  16:42  Page  40
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File  : SHIPROCK ALTS 2 3 OFFSITE RESE.ROF
```

```

0
                                Total Dose TDOSE(t), mrem/yr
                                Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

```

```

t (years): 0.000E+00 1.000E+00
TDOSE(t): 9.797E-02 9.820E-02
M(t): 3.919E-03 3.928E-03
Maximum TDOSE(t): 9.833E-02 mrem/yr at t = 2 years
RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK ALTS 2 3 OFFSITE RESE.ROF

```

[illegible][illegible]

U-234	9.03E-08	0	5.27E-02	54	0.00E+00	0	4.32E-04	0	4.79E-06	0	2.68E-05	0	1.79E-07	0	5.31E-02	54
U-235	2.56E-04	0	3.05E-03	3	0.00E+00	0	2.64E-05	0	2.93E-07	0	1.64E-06	0	1.10E-08	0	3.34E-03	3
U-238	1.39E-03	1	3.97E-02	41	0.00E+00	0	3.69E-04	0	4.09E-06	0	2.29E-05	0	1.53E-07	0	4.15E-02	42
Total	1.65E-03	2	9.54E-02	97	0.00E+00	0	8.28E-04	1	9.18E-06	0	5.13E-05	0	3.44E-07	0	9.80E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	1.05E-07	0	5.28E-02	54	0.00E+00	0	4.34E-04	0	4.85E-06	0	2.70E-05	0	5.35E-07	0	5.33E-02	54
U-235	2.58E-04	0	3.06E-03	3	0.00E+00	0	2.65E-05	0	2.97E-07	0	1.65E-06	0	3.27E-08	0	3.35E-03	3
U-238	1.40E-03	1	3.98E-02	41	0.00E+00	0	3.71E-04	0	4.14E-06	0	2.30E-05	0	4.56E-07	0	4.16E-02	42
Total	1.66E-03	2	9.57E-02	97	0.00E+00	0	8.31E-04	1	9.28E-06	0	5.16E-05	0	1.02E-06	0	9.82E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent (i)	Product (j)	Thread Fraction	DSR(j,t) (mrem/yr)/(pCi/g) 0.000E+00 1.000E+00
U-234	U-234	1.000E+00	3.579E-03 3.587E-03
U-234	Th-230	1.000E+00	1.769E-07 5.318E-07
U-234	Ra-226+D	1.000E+00	7.524E-12 5.286E-11

U-234	Pb-210+D	1.000E+00	1.346E-14	2.015E-13
U-234	Po-210	1.000E+00	3.497E-15	8.589E-14
U-234	ΣDSR(j)		3.579E-03	3.588E-03
0U-234	U-234	1.339E-06	4.792E-09	4.803E-09
U-234	Th-230	1.339E-06	2.369E-13	7.121E-13
U-234	Ra-226+D	1.339E-06	1.007E-17	7.078E-17
U-234	Pb-210+D1	1.339E-06	1.811E-20	2.709E-19
U-234	ΣDSR(j)		4.792E-09	4.804E-09
0U-235+D	U-235+D	1.000E+00	3.492E-03	3.501E-03
U-235+D	Pa-231	1.000E+00	9.220E-07	2.772E-06
U-235+D	Ac-227+D	1.000E+00	7.475E-09	5.196E-08
U-235	ΣDSR(j)		3.493E-03	3.504E-03
0U-238	U-238	5.450E-07	1.668E-09	1.671E-09
0U-238+D	U-238+D	1.000E+00	3.171E-03	3.179E-03
U-238+D	U-234	1.000E+00	5.054E-09	1.519E-08
U-238+D	Th-230	1.000E+00	1.665E-13	1.166E-12
U-238+D	Ra-226+D	1.000E+00	5.027E-18	7.169E-19
U-238+D	Pb-210+D	1.000E+00	3.012E-19	3.174E-19
U-238+D	Po-210	1.000E+00	1.119E-19	2.676E-20
U-238	ΣDSR(j)		3.171E-03	3.179E-03
0U-238+D	U-238+D	1.339E-06	4.246E-09	4.256E-09
U-238+D	U-234	1.339E-06	6.767E-15	2.035E-14
U-238+D	Th-230	1.339E-06	2.230E-19	1.562E-18
U-238+D	Ra-226+D	1.339E-06	8.982E-24	2.858E-23
U-238+D	Pb-210+D1	1.339E-06	2.902E-25	8.664E-26
U-238	ΣDSR(j)		4.246E-09	4.256E-09

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t= 0.000E+00	1.000E+00
U-234	6.985E+03	6.968E+03
U-235	7.157E+03	7.134E+03
U-238	7.883E+03	7.864E+03

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 2 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)

U-234	1.485E+01	2	3.592E-03	6.960E+03	3.592E-03	6.960E+03
U-235	9.550E-01	2	3.510E-03	7.123E+03	3.510E-03	7.123E+03
U-238	1.308E+01	1.99	3.183E-03	7.855E+03	3.183E-03	7.855E+03

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 45
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-234	1.000E+00	5.315E-02	5.327E-02
U-234	U-234	1.339E-06	7.116E-08	7.133E-08
U-234	U-238	1.000E+00	6.611E-08	1.987E-07
U-234	ΣDOSE(j):		5.315E-02	5.327E-02
0Th-230	U-234	1.000E+00	2.627E-06	7.897E-06
Th-230	U-238	1.000E+00	2.178E-12	1.525E-11
Th-230	ΣDOSE(j):		2.627E-06	7.897E-06
0Ra-226	U-234	1.000E+00	1.117E-10	7.850E-10
Ra-226	U-238	1.000E+00	6.576E-17	9.376E-18
Ra-226	ΣDOSE(j):		1.117E-10	7.850E-10
0Pb-210	U-234	1.000E+00	1.999E-13	2.993E-12
Pb-210	U-238	1.000E+00	3.939E-18	4.151E-18
Pb-210	ΣDOSE(j):		1.999E-13	2.993E-12
0Po-210	U-234	1.000E+00	5.193E-14	1.276E-12
Po-210	U-238	1.000E+00	1.464E-18	3.500E-19
Po-210	ΣDOSE(j):		5.193E-14	1.276E-12
0Th-230	U-234	1.339E-06	3.518E-12	1.057E-11
Th-230	U-238	1.339E-06	2.916E-18	2.044E-17
Th-230	ΣDOSE(j):		3.518E-12	1.057E-11
0Ra-226	U-234	1.339E-06	1.496E-16	1.051E-15
Ra-226	U-238	1.339E-06	1.175E-22	3.739E-22
Ra-226	ΣDOSE(j):		1.496E-16	1.051E-15
0Pb-210	U-234	1.339E-06	2.689E-19	4.023E-18
Pb-210	U-238	1.339E-06	3.796E-24	1.133E-24
Pb-210	ΣDOSE(j):		2.689E-19	4.023E-18
0U-235	U-235	1.000E+00	3.335E-03	3.344E-03
0Pa-231	U-235	1.000E+00	8.805E-07	2.647E-06
0Ac-227	U-235	1.000E+00	7.139E-09	4.963E-08
0U-238	U-238	5.450E-07	2.181E-08	2.186E-08
U-238	U-238	1.000E+00	4.148E-02	4.158E-02
U-238	ΣDOSE(j):		4.148E-02	4.158E-02
0U-238	U-238	1.339E-06	5.554E-08	5.567E-08

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 46
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00 1.000E+00
U-234	U-238	1.339E-06	8.852E-14 2.661E-13

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00 1.000E+00
U-234	U-234	1.000E+00	1.485E+01 1.484E+01
U-234	U-234	1.339E-06	1.988E-05 1.988E-05
U-234	U-238	1.000E+00	0.000E+00 3.692E-05
U-234	ΣS(j):		1.485E+01 1.484E+01
0Th-230	U-234	1.000E+00	0.000E+00 1.365E-04
Th-230	U-238	1.000E+00	0.000E+00 1.698E-10
Th-230	ΣS(j):		0.000E+00 1.365E-04
0Ra-226	U-234	1.000E+00	0.000E+00 2.957E-08
Ra-226	U-238	1.000E+00	0.000E+00 2.219E-14
Ra-226	ΣS(j):		0.000E+00 2.957E-08
0Pb-210	U-234	1.000E+00	0.000E+00 3.053E-10
Pb-210	U-238	1.000E+00	0.000E+00 6.647E-14
Pb-210	ΣS(j):		0.000E+00 3.054E-10
0Po-210	U-234	1.000E+00	0.000E+00 1.010E-10
Po-210	U-238	1.000E+00	0.000E+00 8.724E-15
Po-210	ΣS(j):		0.000E+00 1.010E-10
0Th-230	U-234	1.339E-06	0.000E+00 1.828E-10
Th-230	U-238	1.339E-06	0.000E+00 2.272E-16
Th-230	ΣS(j):		0.000E+00 1.828E-10
0Ra-226	U-234	1.339E-06	0.000E+00 3.959E-14
Ra-226	U-238	1.339E-06	0.000E+00 1.639E-19
Ra-226	ΣS(j):		0.000E+00 3.959E-14
0Pb-210	U-234	1.339E-06	0.000E+00 4.089E-16
Pb-210	U-238	1.339E-06	0.000E+00 8.666E-21
Pb-210	ΣS(j):		0.000E+00 4.089E-16
0U-235	U-235	1.000E+00	9.550E-01 9.546E-01
0Pa-231	U-235	1.000E+00	0.000E+00 2.020E-05
0Ac-227	U-235	1.000E+00	0.000E+00 3.181E-07
0U-238	U-238	5.450E-07	7.129E-06 7.126E-06
U-238	U-238	1.000E+00	1.308E+01 1.308E+01

U-238 $\Sigma S(j)$: 1.308E+01 1.308E+01
 0U-238 U-238 1.339E-06 1.751E-05 1.751E-05
 1RESRAD-OFFSITE, Version 4.0 T_{1/2} Limit = 30 days 03/23/2023 16:42 Page 48
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	0.000E+00	4.943E-11

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T_{1/2} Limit = 30 days 03/23/2023 16:42 Page 49
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Run Time Information

ResOCalc.EXE execution began at 16:42 on 03/23/2023

ResOCalc.EXE execution ended at 16:42 on 03/23/2023

ResOCalc.EXE execution time 24.481 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years 2

Time = 1.000E+00 years 3

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-10	7.0E-09	0.0E+00	2.7E-11	6.7E-13	5.6E-14	1.7E-14	7.1E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-10	8.8E-07	0.0E+00	2.9E-09	4.2E-10	2.4E-12	1.6E-12	8.8E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-16	1.7E-13	0.0E+00	3.2E-14	8.6E-16	1.0E-15	2.1E-17	2.0E-13
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.2E-19	3.4E-14	0.0E+00	1.5E-14	1.8E-15	5.3E-16	1.5E-17	5.2E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.4E-11	3.5E-11	0.0E+00	1.7E-12	4.7E-14	1.7E-13	1.0E-15	1.1E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-11	2.6E-06	0.0E+00	8.6E-09	3.5E-11	7.3E-12	4.8E-12	2.6E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-08	5.3E-02	0.0E+00	4.3E-04	4.8E-06	2.7E-05	1.8E-07	5.3E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-04	3.1E-03	0.0E+00	2.6E-05	2.9E-07	1.6E-06	1.1E-08	3.3E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.0E-02	0.0E+00	3.7E-04	4.1E-06	2.3E-05	1.5E-07	4.1E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.6E-03	9.5E-02	0.0E+00	8.3E-04	9.2E-06	5.1E-05	3.4E-07	9.8E-02

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.1E-10	4.9E-08	0.0E+00	1.9E-10	2.3E-12	3.9E-13	2.5E-13	5.0E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-09	2.6E-06	0.0E+00	8.7E-09	1.4E-09	5.4E-12	1.1E-11	2.6E-06
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-15	2.5E-12	0.0E+00	4.8E-13	1.3E-14	1.5E-14	6.4E-16	3.0E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.2E-17	8.4E-13	0.0E+00	3.7E-13	5.1E-14	1.3E-14	5.1E-16	1.3E-12
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	5.2E-10	2.5E-10	0.0E+00	1.3E-11	3.7E-13	1.2E-12	1.5E-14	7.8E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.4E-11	7.9E-06	0.0E+00	2.6E-08	9.2E-11	1.6E-11	3.3E-11	7.9E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-07	5.3E-02	0.0E+00	4.3E-04	4.8E-06	2.7E-05	5.3E-07	5.3E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.6E-04	3.1E-03	0.0E+00	2.7E-05	3.0E-07	1.6E-06	3.3E-08	3.3E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-03	4.0E-02	0.0E+00	3.7E-04	4.1E-06	2.3E-05	4.6E-07	4.2E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.7E-03	9.6E-02	0.0E+00	8.3E-04	9.3E-06	5.2E-05	1.0E-06	9.8E-02

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
Time = 0.000E+00	4
Time = 1.000E+00	6

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)
DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)

DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)

Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		From releases to ground water and to surface water													
Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water		
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

		Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
		Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
Radio-	Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
	Ac-227	8.05E-17	0	2.31E-15	0	1.11E-17	0	2.74E-19	0	2.27E-20	0	6.84E-21	0	2.41E-15	0
	Pa-231	5.41E-16	0	7.85E-14	0	3.65E-16	0	5.32E-17	0	3.09E-19	0	2.00E-19	0	7.95E-14	0
	Pb-210	1.14E-22	0	1.27E-19	0	1.47E-20	0	3.95E-22	0	4.62E-22	0	9.74E-24	0	1.43E-19	0
	Po-210	7.34E-25	0	3.15E-20	0	7.63E-21	0	9.28E-22	0	2.67E-22	0	7.43E-24	0	4.03E-20	0
	Ra-226	5.97E-17	0	2.84E-17	0	8.44E-19	0	2.32E-20	0	8.39E-20	0	5.04E-22	0	8.90E-17	0
	Th-230	8.55E-18	0	2.37E-13	0	1.29E-15	0	5.23E-18	0	1.10E-18	0	7.17E-19	0	2.39E-13	0
	U-234	6.61E-14	0	4.21E-08	54	2.25E-10	0	2.50E-12	0	1.40E-11	0	9.35E-14	0	4.24E-08	54
	U-235	2.02E-10	0	2.44E-09	3	1.48E-11	0	1.64E-13	0	9.17E-13	0	6.14E-15	0	2.65E-09	3
	U-238	1.01E-09	1	3.16E-08	41	2.50E-10	0	2.78E-12	0	1.55E-11	0	1.04E-13	0	3.29E-08	42

Total	1.22E-09	2	7.61E-08	98	4.90E-10	1	5.44E-12	0	3.04E-11	0	2.04E-13	0	7.79E-08	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 5
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 0 years
 Radionuclides

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.62E-14	0	4.21E-08	54	0.00E+00	0	2.25E-10	0	2.50E-12	0	1.40E-11	0	9.35E-14	0	4.24E-08	54
U-235	2.02E-10	0	2.44E-09	3	0.00E+00	0	1.48E-11	0	1.64E-13	0	9.17E-13	0	6.14E-15	0	2.65E-09	3
U-238	1.01E-09	1	3.16E-08	41	0.00E+00	0	2.50E-10	0	2.78E-12	0	1.55E-11	0	1.04E-13	0	3.29E-08	42
Total	1.22E-09	2	7.61E-08	98	0.00E+00	0	4.90E-10	1	5.44E-12	0	3.04E-11	0	2.04E-13	0	7.79E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 6
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	5.62E-16	0	1.61E-14	0	7.71E-17	0	9.30E-19	0	1.59E-19	0	1.01E-19	0	1.67E-14	0
Pa-231	1.63E-15	0	2.36E-13	0	1.11E-15	0	1.75E-16	0	6.91E-19	0	1.39E-18	0	2.39E-13	0
Pb-210	1.71E-21	0	1.90E-18	0	2.22E-19	0	5.95E-21	0	6.85E-21	0	2.95E-22	0	2.14E-18	0
Po-210	1.79E-23	0	7.70E-19	0	1.87E-19	0	2.57E-20	0	6.56E-21	0	2.54E-22	0	9.89E-19	0
Ra-226	4.19E-16	0	1.99E-16	0	6.26E-18	0	1.85E-19	0	6.04E-19	0	7.52E-21	0	6.25E-16	0
Th-230	2.61E-17	0	7.13E-13	0	3.88E-15	0	1.39E-17	0	2.45E-18	0	5.01E-18	0	7.17E-13	0
U-234	7.65E-14	0	4.22E-08	54	2.26E-10	0	2.52E-12	0	1.40E-11	0	2.79E-13	0	4.25E-08	54
U-235	2.03E-10	0	2.44E-09	3	1.49E-11	0	1.66E-13	0	9.23E-13	0	1.83E-14	0	2.66E-09	3
U-238	1.02E-09	1	3.16E-08	41	2.52E-10	0	2.81E-12	0	1.56E-11	0	3.10E-13	0	3.29E-08	42
Total	1.22E-09	2	7.63E-08	98	4.93E-10	1	5.50E-12	0	3.06E-11	0	6.07E-13	0	7.81E-08	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:42 Page 7
 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location E_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESE.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	7.69E-14	0	4.22E-08	54	0.00E+00	0	2.26E-10	0	2.52E-12	0	1.40E-11	0	2.79E-13	0	4.25E-08	54
U-235	2.03E-10	0	2.44E-09	3	0.00E+00	0	1.49E-11	0	1.66E-13	0	9.23E-13	0	1.83E-14	0	2.66E-09	3
U-238	1.02E-09	1	3.16E-08	41	0.00E+00	0	2.52E-10	0	2.81E-12	0	1.56E-11	0	3.10E-13	0	3.29E-08	42
Total	1.22E-09	2	7.63E-08	98	0.00E+00	0	4.93E-10	1	5.50E-12	0	3.06E-11	0	6.07E-13	0	7.81E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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Dose Conversion Factor (and Related) Parameter Summary

Current Library: DCFPAK3.02

Default Library: DCFPAK3.02

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
DCSF	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCFEXT(1)
DCSF	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCFEXT(2)
DCSF	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCFEXT(3)
DCSF	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCFEXT(4)
DCSF	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCFEXT(5)
DCSF	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCFEXT(6)
DCSF	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCFEXT(7)
DCSF	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCFEXT(8)
DCSF	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCFEXT(9)
DCSF	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCFEXT(10)
DCSF	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCFEXT(11)
DCSF	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCFEXT(12)
DCSF	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCFEXT(13)
DCSF	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCFEXT(14)
DCSF	Pb-214 (Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCFEXT(15)
DCSF	Po-210 (Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCFEXT(16)

DCSF	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCFEXT (17)
DCSF	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCFEXT (18)
DCSF	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCFEXT (19)
DCSF	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCFEXT (20)
DCSF	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCFEXT (21)
DCSF	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCFEXT (22)
DCSF	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCFEXT (23)
DCSF	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCFEXT (24)
DCSF	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCFEXT (25)
DCSF	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCFEXT (26)
DCSF	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCFEXT (27)
DCSF	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCFEXT (28)
DCSF	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCFEXT (29)
DCSF	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCFEXT (30)
DCSF	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCFEXT (31)
DCSF	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCFEXT (32)
DCSF	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCFEXT (33)
DCSF	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCFEXT (34)
DCSF	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCFEXT (35)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Dose conversion factors for inhalation, mrem/pCi:			
1	RESRAD-OFFSITE, Version 4.0	T½ Limit = 30 days	03/23/2023 16:57	Page 3
	Parent Dose Report			
	Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3			
	File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF			

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: DCFPAK3.02 (Adult)

Default Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ac-227+D	6.459E-01	6.459E-01	DCF2 (1)
DCSF	Pa-231	8.505E-01	8.505E-01	DCF2 (2)
DCSF	Pb-210+D	2.126E-02	2.126E-02	DCF2 (3)
DCSF	Pb-210+D1	2.126E-02	2.126E-02	DCF2 (4)
DCSF	Po-210	1.582E-02	1.582E-02	DCF2 (5)
DCSF	Ra-226+D	3.528E-02	3.528E-02	DCF2 (6)
DCSF	Th-230	3.759E-01	3.759E-01	DCF2 (8)
DCSF	U-234	3.479E-02	3.479E-02	DCF2 (10)
DCSF	U-235+D	3.132E-02	3.132E-02	DCF2 (12)
DCSF	U-238	2.973E-02	2.973E-02	DCF2 (13)
DCSF	U-238+D	2.976E-02	2.976E-02	DCF2 (14)

DCSF	Dose conversion factors for ingestion, mrem/pCi:			
DCSF	Ac-227+D	1.606E-03	1.606E-03	DCF3 (1)
DCSF	Pa-231	1.772E-03	1.772E-03	DCF3 (2)
DCSF	Pb-210+D	2.580E-03	2.580E-03	DCF3 (3)
DCSF	Pb-210+D1	2.580E-03	2.580E-03	DCF3 (4)
DCSF	Po-210	4.477E-03	4.477E-03	DCF3 (5)
DCSF	Ra-226+D	1.037E-03	1.037E-03	DCF3 (6)
DCSF	Th-230	7.918E-04	7.918E-04	DCF3 (8)
DCSF	U-234	1.832E-04	1.832E-04	DCF3 (10)
DCSF	U-235+D	1.740E-04	1.740E-04	DCF3 (12)
DCSF	U-238	1.650E-04	1.650E-04	DCF3 (13)
DCSF	U-238+D	1.775E-04	1.775E-04	DCF3 (14)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 4
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Soil to plant transfer factors:			
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,2)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,3)
TF	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,4)
TF				
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,1)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,2)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,3)
TF	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(2,4)
TF				
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,1)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,2)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,3)
TF	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(3,4)
TF				
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,1)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,2)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,3)
TF	Pb-210+D1, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(4,4)
TF				
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,1)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,2)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,3)
TF	Po-210 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(5,4)
TF				

TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,1)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,2)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,3)
TF	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(6,4)
TF				
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,1)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,2)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,3)
TF	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(8,4)
TF				
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,2)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,3)
TF	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,4)
TF				
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,1)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,2)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,3)
TF	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(12,4)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 5

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors

Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,1)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,2)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,3)
TF	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(13,4)
TF				
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,1)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,2)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,3)
TF	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(14,4)
TF				
TF	intake to meat/milk transfer factors:			
TF	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,1)
TF	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	I_M(1,2)
TF				
TF	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	I_M(2,1)
TF	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	I_M(2,2)
TF				
TF	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	I_M(3,1)
TF	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	I_M(3,2)
TF				

TF	Pb-210+D1, beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	8.000E-04	8.000E-04	I_M(4,1)
TF	Pb-210+D1, milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.000E-04	3.000E-04	I_M(4,2)
TF				
TF	Po-210 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	5.000E-03	5.000E-03	I_M(5,1)
TF	Po-210 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	3.400E-04	3.400E-04	I_M(5,2)
TF				
TF	Ra-226+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,1)
TF	Ra-226+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	1.000E-03	1.000E-03	I_M(6,2)
TF				
TF	Th-230 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	1.000E-04	1.000E-04	I_M(8,1)
TF	Th-230 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	5.000E-06	5.000E-06	I_M(8,2)
TF				
TF	U-234 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(10,1)
TF	U-234 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(10,2)
TF				
TF	U-235+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(12,1)
TF	U-235+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(12,2)
TF				
TF	U-238 , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(13,1)
TF	U-238 , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(13,2)
TF				
TF	U-238+D , beef/livestock-intake ratio, (pCi/kg) / (pCi/d)	3.400E-04	3.400E-04	I_M(14,1)
TF	U-238+D , milk/livestock-intake ratio, (pCi/L) / (pCi/d)	6.000E-04	6.000E-04	I_M(14,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Dose Conversion Factor (and Related) Parameter Summary (continued)

Current Library: RESRAD Default Transfer factors
Default Library: RESRAD Default Transfer factors

0 Menu	Parameter	Current Value	Default	Parameter Name
TF	Bioaccumulation factors, fresh water, L/kg:			
TF	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFA(1,1)
TF	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFA(1,2)
TF				
TF	Pa-231 , fish	1.000E+01	1.000E+01	BIOFA(2,1)
TF	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFA(2,2)
TF				
TF	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFA(3,1)
TF	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(3,2)
TF				
TF	Pb-210+D1, fish	3.000E+02	3.000E+02	BIOFA(4,1)
TF	Pb-210+D1, crustacea and mollusks	1.000E+02	1.000E+02	BIOFA(4,2)
TF				
TF	Po-210 , fish	1.000E+02	1.000E+02	BIOFA(5,1)
TF	Po-210 , crustacea and mollusks	2.000E+04	2.000E+04	BIOFA(5,2)

TF				
TF	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFA(6,1)
TF	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFA(6,2)
TF				
TF	Th-230 , fish	1.000E+02	1.000E+02	BIOFA(8,1)
TF	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFA(8,2)
TF				
TF	U-234 , fish	1.000E+01	1.000E+01	BIOFA(10,1)
TF	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(10,2)
TF				
TF	U-235+D , fish	1.000E+01	1.000E+01	BIOFA(12,1)
TF	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(12,2)
TF				
TF	U-238 , fish	1.000E+01	1.000E+01	BIOFA(13,1)
TF	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(13,2)
TF				
TF	U-238+D , fish	1.000E+01	1.000E+01	BIOFA(14,1)
TF	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFA(14,2)

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 7
Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
FSTI	Exposure duration for risk	1.000E+00	3.000E+01	---	ED
FSTI	Basic radiation dose limit (mrem/yr)	2.500E+01	2.500E+01	---	BRDL
RELT	1st release time (years)	0.000E+00		---	RelTime(1)
RELT	2nd release time (years)	1.000E+00		---	RelTime(2)
RELT	3rd release time (years)	2.000E+00		---	RelTime(3)
CONC	Initial concentration of U-234 (pCi/g)	1.485E+01	0.000E+00	---	S1(10)
CONC	Initial concentration of U-235 (pCi/g)	9.550E-01	0.000E+00	---	S1(12)
CONC	Initial concentration of U-238 (pCi/g)	1.308E+01	0.000E+00	---	S1(13)
VDEP	Deposition velocity of Ac-227 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(1)
VDEP	Dep. velocity of Ac-227 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(1)
VDEP	Deposition velocity of Pa-231 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(2)
VDEP	Dep. velocity of Pa-231 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(2)
VDEP	Deposition velocity of Pb-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(3)
VDEP	Dep. velocity of Pb-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(3)
VDEP	Deposition velocity of Po-210 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(5)
VDEP	Dep. velocity of Po-210 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(5)
VDEP	Deposition velocity of Ra-226 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(6)
VDEP	Dep. velocity of Ra-226 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(6)
VDEP	Deposition velocity of Th-230 on total particulates	1.000E-03	1.000E-03	---	DEPVEL(8)
VDEP	Dep. velocity of Th-230 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT(8)

VDEP	Deposition velocity of U-234 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (10)
VDEP	Dep. velocity of U-234 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (10)
VDEP	Deposition velocity of U-235 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (12)
VDEP	Dep. velocity of U-235 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (12)
VDEP	Deposition velocity of U-238 on total particulates	1.000E-03	1.000E-03	---	DEPVEL (13)
VDEP	Dep. velocity of U-238 on respirable particulates	1.000E-03	1.000E-03	---	DEPVELT (13)
DCLR	Distribution coefficients for U-234				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (10)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (10,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (10)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (10)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (10)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (10,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (10)
DCLR	Leach rate constant of U-234 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
0					
DCLR	Distribution coefficients for U-235				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (12)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (12,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (12)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (12)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (12)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (12,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (12)
DCLR	Leach rate constant of U-235 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,12)
DCLR	Distribution coefficients for U-238				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (13)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (13,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (13)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (13)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (13)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,3)

DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (13,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (13)
DCLR	Leach rate constant of U-238 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,13)
DCLR	Distribution coefficients for progeny Ac-227				
DCLR	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
DCLR	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
DCLR	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
DCLR	Bottom sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWB (1)
DCLR	Suspended sediment in surface water body (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCSWS (1)
DCLR	Agricultural area 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,1)
DCLR	Agricultural area 2 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,2)
DCLR	Agricultural area 3 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,3)
DCLR	Agricultural area 4 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCOF (1,4)
DCLR	Offsite Dwelling (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCDWE (1)
DCLR	Leach rate constant of Ac-227 (/yr)	0.000E+00	0.000E+00	1.883E-03	Rleach (1,1)

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0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Pa-231				
DCLR	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
DCLR	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
DCLR	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
DCLR	Bottom sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWB (2)
DCLR	Suspended sediment in surface water body (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCSWS (2)
DCLR	Agricultural area 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,1)
DCLR	Agricultural area 2 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,2)
DCLR	Agricultural area 3 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,3)
DCLR	Agricultural area 4 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCOF (2,4)
DCLR	Offsite Dwelling (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCDWE (2)
DCLR	Leach rate constant of Pa-231 (/yr)	0.000E+00	0.000E+00	7.561E-04	Rleach (1,2)
DCLR	Distribution coefficients for progeny Pb-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC (3)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU (3,1)
DCLR	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS (3)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWB (3)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCSWS (3)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCOF (3,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCDWE (3)
DCLR	Leach rate constant of Pb-210 (/yr)	0.000E+00	0.000E+00	3.786E-04	Rleach (1,3)

DCLR	Distribution coefficients for progeny Po-210				
DCLR	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC (5)
DCLR	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU (5,1)
DCLR	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS (5)
DCLR	Bottom sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWB (5)
DCLR	Suspended sediment in surface water body (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCSWS (5)
DCLR	Agricultural area 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,1)
DCLR	Agricultural area 2 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,2)
DCLR	Agricultural area 3 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,3)
DCLR	Agricultural area 4 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCOF (5,4)
DCLR	Offsite Dwelling (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCDWE (5)
DCLR	Leach rate constant of Po-210 (/yr)	0.000E+00	0.000E+00	3.740E-03	Rleach (1,5)
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Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
DCLR	Distribution coefficients for progeny Ra-226				
DCLR	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC (6)
DCLR	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU (6,1)
DCLR	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS (6)
DCLR	Bottom sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWB (6)
DCLR	Suspended sediment in surface water body (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCSWS (6)
DCLR	Agricultural area 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,1)
DCLR	Agricultural area 2 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,2)
DCLR	Agricultural area 3 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,3)
DCLR	Agricultural area 4 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCOF (6,4)
DCLR	Offsite Dwelling (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCDWE (6)
DCLR	Leach rate constant of Ra-226 (/yr)	0.000E+00	0.000E+00	5.405E-04	Rleach (1,6)
DCLR	Distribution coefficients for progeny Th-230				
DCLR	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC (8)
DCLR	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU (8,1)
DCLR	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS (8)
DCLR	Bottom sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWB (8)
DCLR	Suspended sediment in surface water body (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCSWS (8)
DCLR	Agricultural area 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,1)
DCLR	Agricultural area 2 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,2)
DCLR	Agricultural area 3 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,3)
DCLR	Agricultural area 4 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCOF (8,4)
DCLR	Offsite Dwelling (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCDWE (8)
DCLR	Leach rate constant of Th-230 (/yr)	0.000E+00	0.000E+00	6.318E-07	Rleach (1,8)
LYOT	Bearing of X axis (clockwise angle N-->X in degrees)	9.000E+01	9.000E+01	---	DNXBEARING
LYOT	Length of Primary contamination in X Direction	2.110E+02	1.000E+02	---	SOURCEXY (1)

LYOT	Length of Primary contamination in Y Direction	2.110E+02	1.000E+02	---	SOURCEXY(2)
LYOT	Smaller X coordinate of Agricultural Area 1	4.444E+01	3.438E+01	---	AGRIX(1,1)
LYOT	Larger X coordinate of Agricultural Area 1	7.574E+01	6.562E+01	---	AGRIX(2,1)
LYOT	Smaller Y coordinate of Agricultural Area 1	-2.711E+02	2.340E+02	---	AGRIX(3,1)
LYOT	Larger Y coordinate of Agricultural Area 1	-2.391E+02	2.660E+02	---	AGRIX(4,1)
LYOT	Smaller X coordinate of Agricultural Area 2	4.444E+01	3.438E+01	---	AGRIX(1,2)
LYOT	Larger X coordinate of Agricultural Area 2	7.574E+01	6.562E+01	---	AGRIX(2,2)
LYOT	Smaller Y coordinate of Agricultural Area 2	-3.100E+02	2.680E+02	---	AGRIX(3,2)
LYOT	Larger Y coordinate of Agricultural Area 2	-2.780E+02	3.000E+02	---	AGRIX(4,2)
LYOT	Smaller X coordinate of Agricultural Area 3	2.222E+01	0.000E+00	---	AGRIX(1,3)
LYOT	Larger X coordinate of Agricultural Area 3	1.222E+02	1.000E+02	---	AGRIX(2,3)
LYOT	Smaller Y coordinate of Agricultural Area 3	-4.196E+02	4.500E+02	---	AGRIX(3,3)
LYOT	Larger Y coordinate of Agricultural Area 3	-3.196E+02	5.500E+02	---	AGRIX(4,3)
LYOT	Smaller X coordinate of Agricultural Area 4	-1.111E+02	0.000E+00	---	AGRIX(1,4)
LYOT	Larger X coordinate of Agricultural Area 4	-1.110E+01	1.000E+02	---	AGRIX(2,4)
LYOT	Smaller Y coordinate of Agricultural Area 4	-4.196E+02	3.000E+02	---	AGRIX(3,4)
LYOT	Larger Y coordinate of Agricultural Area 4	-3.196E+02	4.000E+02	---	AGRIX(4,4)
LYOT	Smaller X coordinate of Dwelling Area	-5.278E+01	3.438E+01	---	DWELLXY(1)
LYOT	Larger X coordinate of Dwelling Area	-1.667E+01	6.562E+01	---	DWELLXY(2)

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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
LYOT	Smaller Y coordinate of Dwelling Area	-2.906E+02	1.340E+02	---	DWELLXY(3)
LYOT	Larger Y coordinate of Dwelling Area	-2.419E+02	1.660E+02	---	DWELLXY(4)
LYOT	Smaller X coordinate of Surface water body	1.861E+02	-1.000E+02	---	SWXY(1)
LYOT	Larger X coordinate of Surface water body	4.861E+02	2.000E+02	---	SWXY(2)
LYOT	Smaller Y coordinate of Surface water body	5.609E+02	5.500E+02	---	SWXY(3)
LYOT	Larger Y coordinate of Surface water body	8.609E+02	8.500E+02	---	SWXY(4)
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(1)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(3)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(4)
STOR	Livestock feed - pasture or silage	1.000E+00	1.000E+00	---	STOR_T(5)
STOR	Livestock feed - grain	4.500E+01	4.500E+01	---	STOR_T(6)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(7)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(9)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(10)
TIME	Times at which dose/risk are to be reported (yr)	1.000E+00	1.000E+00	---	T(2)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+00	---	T(3)
TIME	Times at which dose/risk are to be reported (yr)	not used	6.000E+00	---	T(4)

TIME	Times at which dose/risk are to be reported (yr)	not used	1.200E+01	---	T(5)
TIME	Times at which dose/risk are to be reported (yr)	not used	3.000E+01	---	T(6)
TIME	Times at which dose/risk are to be reported (yr)	not used	7.500E+01	---	T(7)
TIME	Times at which dose/risk are to be reported (yr)	not used	1.750E+02	---	T(8)
TIME	Times at which dose/risk are to be reported (yr)	not used	4.200E+02	---	T(9)
TIME	Times at which dose/risk are to be reported (yr)	not used	9.700E+02	---	T(10)
SITE	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
SITE	Rainfall Erosion Index	1.600E+02	1.600E+02	---	RAINEROS
PRCZ	Area of primary contamination (m**2)	4.452E+04	1.000E+04	---	AREA
PRCZ	Length parallel to aquifer flow (m)	2.114E+02	1.000E+02	---	LCZPAQ
PRCZ	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
PRCZ	Mass loading of all particulates for release(g/m**3)	1.750E-02	1.000E-04	---	MLFD
PRCZ	DepositionVelocityOfAllParticulates for release(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUSTT
PRCZ	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
PRCZ	DepositionVelocityOfRespirableParticulatesForRe(m/s)	1.000E-03	1.000E-03	---	DEPVEL_DUST
PRCZ	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
PRCZ	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
PRCZ	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
PRCZ	Slope-length-steepness factor of prim. contamination	4.000E-01	4.000E-01	---	SLPLENSTPPC
PRCZ	Cropping-management factor of primary contamination	3.000E-03	3.000E-03	---	CRPMANGPC
PRCZ	Conservation practice factor of prim. contamination	1.000E+00	1.000E+00	---	CONVPRACPC
PRCZ	Fraction of primary contamination that is submerged	0.000E+00	0.000E+00	---	SUBMERGEDF
PRCZ	Thickness of primary contamination (m)	2.000E+00	2.000E+00	---	THICK0

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Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
PRCZ	Soil erodibility factor of contamination (tons/acre)	0.000E+00	4.000E-01	---	ERODIBILITYCZ
PRCZ	Density of primary contamination (g/cm**3)	2.200E+00	1.500E+00	---	DENSCZ
PRCZ	Computed erosion rate of contamination (m/yr)	0.000E+00	1.147E-05	---	VCZ
PRCZ	Total porosity of primary contamination	4.000E-01	4.000E-01	---	TPCZ
PRCZ	Field capacity of primary contamination	3.000E-01	3.000E-01	---	FCCZ
PRCZ	Effective porosity of primary contamination	4.000E-01	4.000E-01	---	EPCZ
PRCZ	Hydraulic conductivity of prime contamination (m/yr)	3.000E+01	1.000E+01	---	HCCZ
PRCZ	b parameter of primary contamination	5.300E+00	5.300E+00	---	BCZ
PRCZ	longitudinal dispersivity of prime contamination (m)	5.000E-02	5.000E-02	---	ALPHALCZ
PRCZ	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
PRCZ	Soil erodibility factor of cover (tons/acre)	not used	4.000E-01	---	ERODIBILITYCV
PRCZ	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
PRCZ	Computed erosion rate of cover material (m/yr)	not used	1.147E-05	---	VCV
PRCZ	Total porosity of the cover material	not used	4.000E-01	---	TPCV
PRCZ	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

PSDR	Sediment Delivery Ratio, SDR				
PSDR	from primary contamination to surface water body	0.000E+00	0.000E+00	---	SDRDWELL
PSDR	from primary contamination to non-leafy veg. field	0.000E+00	0.000E+00	---	SDROF(1)
PSDR	from primary contamination to leafy veg. field	0.000E+00	0.000E+00	---	SDROF(2)
PSDR	from primary contamination to pasture	0.000E+00	0.000E+00	---	SDROF(3)
PSDR	from primary contamination to feed grain field	0.000E+00	0.000E+00	---	SDROF(4)
PSDR	from primary contamination to surface water body	1.000E+00	1.000E+00	---	SDR
AGRI	Areal extent of Agricultural Area 1 (m**2)	1.002E+03	1.000E+03	---	AREAO(1)
AGRI	Fraction of Agri. Area 1 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(1)
AGRI	Evapotranspiration coefficient in Agri. Area 1	5.000E-01	5.000E-01	---	EVAPTRN(1)
AGRI	Runoff coefficient in Agricultural Area 1	2.000E-01	2.000E-01	---	RUNOF(1)
AGRI	Mixing depth/plow layer of Agricultural Area 1	1.500E-01	1.500E-01	---	DPTHMIXG(1)
AGRI	Water filled porosity of soil in Agri. Area 1	3.000E-01	3.000E-01	---	TMOF(1)
AGRI	Computed erosion rate of soil in Agri. Area 1	1.147E-05	1.147E-05	---	EROSN(1)
AGRI	Dry Bulk Density of soil in Agricultural Area 1	1.500E+00	1.500E+00	---	RHOB(1)
AGRI	Soil erodibility factor of Agricultural Area 1	4.000E-01	4.000E-01	---	ERODIBILITY(1)
AGRI	Slope-length-steepness factor, Agricultural Area 1	4.000E-01	4.000E-01	---	SLPLENSTP(1)
AGRI	Cropping-management factor of Agricultural Area 1	3.000E-03	3.000E-03	---	CRPMANG(1)
AGRI	Conservation practice factor of Agricultural Area 1	1.000E+00	1.000E+00	---	CONVPRAC(1)
AGRI	Total porosity of soil in Agricultural Area 1	not used	4.000E-01	---	TPOF(1)
AGRI	Areal extent of Agricultural Area 2 (m**2)	1.002E+03	1.000E+03	---	AREAO(2)
AGRI	Fraction of Agri. Area 2 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(2)
AGRI	Evapotranspiration coefficient in Agri. Area 2	5.000E-01	5.000E-01	---	EVAPTRN(2)
AGRI	Runoff coefficient in Agricultural Area 2	2.000E-01	2.000E-01	---	RUNOF(2)
AGRI	Mixing depth/plow layer of Agricultural Area 2	1.500E-01	1.500E-01	---	DPTHMIXG(2)
AGRI	Water filled porosity of soil in Agri. Area 2	3.000E-01	3.000E-01	---	TMOF(2)
AGRI	Computed erosion rate of soil in Agri. Area 2	1.147E-05	1.147E-05	---	EROSN(2)
AGRI	Dry Bulk Density of soil in Agricultural Area 2	1.500E+00	1.500E+00	---	RHOB(2)
AGRI	Soil erodibility factor of Agricultural Area 2	4.000E-01	4.000E-01	---	ERODIBILITY(2)
AGRI	Slope-length-steepness factor, Agricultural Area 2	4.000E-01	4.000E-01	---	SLPLENSTP(2)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AGRI	Cropping-management factor of Agricultural Area 2	3.000E-03	3.000E-03	---	CRPMANG(2)
AGRI	Conservation practice factor of Agricultural Area 2	1.000E+00	1.000E+00	---	CONVPRAC(2)
AGRI	Total porosity of soil in Agricultural Area 2	not used	4.000E-01	---	TPOF(2)
AGRI	Areal extent of Agricultural Area 3 (m**2)	9.998E+03	1.000E+04	---	AREAO(3)
AGRI	Fraction of Agri. Area 3 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(3)
AGRI	Evapotranspiration coefficient in Agri. Area 3	5.000E-01	5.000E-01	---	EVAPTRN(3)
AGRI	Runoff coefficient in Agricultural Area 3	2.000E-01	2.000E-01	---	RUNOF(3)
AGRI	Mixing depth/plow layer of Agricultural Area 3	1.500E-01	1.500E-01	---	DPTHMIXG(3)
AGRI	Water filled porosity of soil in Agri. Area 3	3.000E-01	3.000E-01	---	TMOF(3)
AGRI	Computed erosion rate of soil in Agri. Area 3	1.147E-05	1.147E-05	---	EROSN(3)

AGRI	Dry Bulk Density of soil in Agricultural Area 3	1.500E+00	1.500E+00	---	RHOB(3)
AGRI	Soil erodibility factor of Agricultural Area 3	4.000E-01	4.000E-01	---	ERODIBILITY(3)
AGRI	Slope-length-steepness factor, Agricultural Area 3	4.000E-01	4.000E-01	---	SLPLENSTP(3)
AGRI	Cropping-management factor of Agricultural Area 3	3.000E-03	3.000E-03	---	CRPMANG(3)
AGRI	Conservation practice factor of Agricultural Area 3	1.000E+00	1.000E+00	---	CONVPRAC(3)
AGRI	Total porosity of soil in Agricultural Area 3	not used	4.000E-01	---	TPOF(3)
AGRI	Areal extent of Agricultural Area 4 (m**2)	1.000E+04	1.000E+04	---	AREAO(4)
AGRI	Fraction of Agri. Area 4 directly over the c.z.	0.000E+00	0.000E+00	---	FAREA_PLANT(4)
AGRI	Evapotranspiration coefficient in Agri. Area 4	5.000E-01	5.000E-01	---	EVAPTRN(4)
AGRI	Runoff coefficient in Agricultural Area 4	2.000E-01	2.000E-01	---	RUNOF(4)
AGRI	Mixing depth/plow layer of Agricultural Area 4	1.500E-01	1.500E-01	---	DPTHMIXG(4)
AGRI	Water filled porosity of soil in Agri. Area 4	3.000E-01	3.000E-01	---	TMOF(4)
AGRI	Computed erosion rate of soil in Agri. Area 4	1.147E-05	1.147E-05	---	EROSN(4)
AGRI	Dry Bulk Density of soil in Agricultural Area 4	1.500E+00	1.500E+00	---	RHOB(4)
AGRI	Soil erodibility factor of Agricultural Area 4	4.000E-01	4.000E-01	---	ERODIBILITY(4)
AGRI	Slope-length-steepness factor, Agricultural Area 4	4.000E-01	4.000E-01	---	SLPLENSTP(4)
AGRI	Cropping-management factor of Agricultural Area 4	3.000E-03	3.000E-03	---	CRPMANG(4)
AGRI	Conservation practice factor of Agricultural Area 4	1.000E+00	1.000E+00	---	CONVPRAC(4)
AGRI	Total porosity of soil in Agricultural Area 4	not used	4.000E-01	---	TPOF(4)
DWEL	Areal extent of Offsite dwelling site (m**2)	1.759E+03	1.000E+03	---	AREAODWELL
DWEL	Evapotranspiration coefficient in dwelling (Off)site	5.000E-01	5.000E-01	---	EVAPTRNDWELL
DWEL	Runoff coefficient in Offsite dwelling site	2.000E-01	2.000E-01	---	RUNOFDWELL
DWEL	Mixing depth of Offsite dwelling site	1.500E-01	1.500E-01	---	DPTHMIXGDWELL
DWEL	Water filled porosity of soil in Offsite Dwelling	3.000E-01	3.000E-01	---	TMOFDWELL
DWEL	Computed erosion rate of soil in Offsite Dwelling	0.000E+00	0.000E+00	---	EROSNDWELL
DWEL	Dry Bulk Density of soil in Offsite dwelling site	1.500E+00	1.500E+00	---	RHOBDWELL
DWEL	Soil erodibility factor of soil in Dwelling site	0.000E+00	0.000E+00	---	ERODIBILITYDWELL
DWEL	Slope-length-steepness factor of Dwelling site	4.000E-01	4.000E-01	---	SLPLENSTPDWELL
DWEL	Cropping-management factor of Dwelling site	3.000E-03	3.000E-03	---	CRPMANGDWELL
DWEL	Conservation practice factor of Offsite Dwelling sit	1.000E+00	1.000E+00	---	CONVPRACDWELL
DWEL	Total porosity of soil in Offsite Dwelling	not used	4.000E-01	---	TPOFDWELL
AIRT	Dispersion Coefficients; 1 = Pasquill-Gifford	1	1	---	IDISPMOD
AIRT	Population zone; 1 = Rural	1	1	---	IZONE
AIRT	Release height, (m)	1.000E+00	1.000E+00	---	AIRRELHT
AIRT	Heat flux for buoyant plume (cal/s),	0.000E+00	0.000E+00	---	HEATFLX

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Anemometer height, (m)	1.000E+01	1.000E+01	---	ANH
AIRT	Absolute temperature (Kelvin)	2.850E+02	2.850E+02	---	TABK
AIRT	AM atmospheric mixing height (m)	4.000E+02	4.000E+02	---	AMIX
AIRT	PM atmospheric mixing height (m)	1.600E+03	1.600E+03	---	PMIX

AIRT	Elevation of Agricultural Area 1 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(1)
AIRT	Elevation of Agricultural Area 2 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(2)
AIRT	Elevation of Agricultural Area 3 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(3)
AIRT	Elevation of Agricultural Area 4 above primary cont.	0.000E+00	0.000E+00	---	AGRIELEV(4)
AIRT	Elevation of Dwelling Site relative to primary cont.	0.000E+00	0.000E+00	---	DWELLELEV
AIRT	Elevation of Surf.Wtr body relative to primary cont.	0.000E+00	0.000E+00	---	SWELEV
AIRT	Joint frequency Meteorological data:				
AIRT	Upper limit for windspeed class 1 (m/s)	8.900E-01	8.900E-01	---	WINDSPEED(1)
AIRT	Upper limit for windspeed class 2 (m/s)	2.460E+00	2.460E+00	---	WINDSPEED(2)
AIRT	Upper limit for windspeed class 3 (m/s)	4.470E+00	4.470E+00	---	WINDSPEED(3)
AIRT	Upper limit for windspeed class 4 (m/s)	6.930E+00	6.930E+00	---	WINDSPEED(4)
AIRT	Upper limit for windspeed class 5 (m/s)	9.610E+00	9.610E+00	---	WINDSPEED(5)
AIRT	Upper limit for windspeed class 6 (m/s)	1.252E+01	1.252E+01	---	WINDSPEED(6)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 1 and stability class A	5.400E-03	0.000E+00	---	DFREQ(1,1,1)
AIRT	for wind speed class 1 and stability class B	4.500E-03	0.000E+00	---	DFREQ(1,2,1)
AIRT	for wind speed class 1 and stability class C	4.500E-04	0.000E+00	---	DFREQ(1,3,1)
AIRT	for wind speed class 1 and stability class D	6.800E-04	1.000E-01	---	DFREQ(1,4,1)
AIRT	for wind speed class 1 and stability class E	2.860E-03	2.000E-01	---	DFREQ(1,5,1)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,1)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,1)
AIRT	for wind speed class 2 and stability class C	1.300E-03	0.000E+00	---	DFREQ(2,3,1)
AIRT	for wind speed class 2 and stability class D	1.440E-03	0.000E+00	---	DFREQ(2,4,1)
AIRT	for wind speed class 2 and stability class E	2.260E-03	0.000E+00	---	DFREQ(2,5,1)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,1)
AIRT	for wind speed class 3 and stability class B	1.440E-03	0.000E+00	---	DFREQ(3,2,1)
AIRT	for wind speed class 3 and stability class C	2.260E-03	0.000E+00	---	DFREQ(3,3,1)
AIRT	for wind speed class 3 and stability class D	5.340E-03	0.000E+00	---	DFREQ(3,4,1)
AIRT	for wind speed class 3 and stability class E	8.900E-04	0.000E+00	---	DFREQ(3,5,1)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,1)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,1)

AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,1)
AIRT	for wind speed class 4 and stability class D	4.110E-03	0.000E+00	---	DFREQ(4,4,1)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,1)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,1)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,1)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,1)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,1)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,1)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,1)
AIRT	Joint Frequency in N Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,1)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,1)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,1)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,1)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,1)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,1)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 1 and stability class A	3.110E-03	0.000E+00	---	DFREQ(1,1,2)
AIRT	for wind speed class 1 and stability class B	2.520E-03	0.000E+00	---	DFREQ(1,2,2)
AIRT	for wind speed class 1 and stability class C	4.300E-04	0.000E+00	---	DFREQ(1,3,2)
AIRT	for wind speed class 1 and stability class D	9.300E-04	1.000E-01	---	DFREQ(1,4,2)
AIRT	for wind speed class 1 and stability class E	3.150E-03	2.000E-01	---	DFREQ(1,5,2)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 2 and stability class A	7.500E-04	0.000E+00	---	DFREQ(2,1,2)
AIRT	for wind speed class 2 and stability class B	1.510E-03	0.000E+00	---	DFREQ(2,2,2)
AIRT	for wind speed class 2 and stability class C	8.200E-04	0.000E+00	---	DFREQ(2,3,2)
AIRT	for wind speed class 2 and stability class D	1.100E-03	0.000E+00	---	DFREQ(2,4,2)
AIRT	for wind speed class 2 and stability class E	2.190E-03	0.000E+00	---	DFREQ(2,5,2)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,2)
AIRT	for wind speed class 3 and stability class B	5.500E-04	0.000E+00	---	DFREQ(3,2,2)
AIRT	for wind speed class 3 and stability class C	1.990E-03	0.000E+00	---	DFREQ(3,3,2)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,2)
AIRT	for wind speed class 3 and stability class E	1.510E-03	0.000E+00	---	DFREQ(3,5,2)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,2)

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Parent Dose Report
Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,2)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,2)
AIRT	for wind speed class 4 and stability class C	8.900E-04	0.000E+00	---	DFREQ(4,3,2)
AIRT	for wind speed class 4 and stability class D	3.700E-03	0.000E+00	---	DFREQ(4,4,2)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,2)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,2)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,2)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,2)
AIRT	for wind speed class 5 and stability class D	1.370E-03	0.000E+00	---	DFREQ(5,4,2)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,2)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,2)
AIRT	Joint Frequency in NNE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,2)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,2)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,2)
AIRT	for wind speed class 6 and stability class D	9.600E-04	0.000E+00	---	DFREQ(6,4,2)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,2)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,2)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 1 and stability class A	6.380E-03	0.000E+00	---	DFREQ(1,1,3)
AIRT	for wind speed class 1 and stability class B	4.270E-03	0.000E+00	---	DFREQ(1,2,3)
AIRT	for wind speed class 1 and stability class C	1.310E-03	0.000E+00	---	DFREQ(1,3,3)
AIRT	for wind speed class 1 and stability class D	1.980E-03	1.000E-01	---	DFREQ(1,4,3)
AIRT	for wind speed class 1 and stability class E	1.245E-02	2.000E-01	---	DFREQ(1,5,3)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 2 and stability class A	1.990E-03	0.000E+00	---	DFREQ(2,1,3)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,3)
AIRT	for wind speed class 2 and stability class C	3.770E-03	0.000E+00	---	DFREQ(2,3,3)
AIRT	for wind speed class 2 and stability class D	2.260E-03	0.000E+00	---	DFREQ(2,4,3)
AIRT	for wind speed class 2 and stability class E	9.250E-03	0.000E+00	---	DFREQ(2,5,3)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,3)
AIRT	for wind speed class 3 and stability class B	2.060E-03	0.000E+00	---	DFREQ(3,2,3)
AIRT	for wind speed class 3 and stability class C	7.190E-03	0.000E+00	---	DFREQ(3,3,3)
AIRT	for wind speed class 3 and stability class D	7.120E-03	0.000E+00	---	DFREQ(3,4,3)
AIRT	for wind speed class 3 and stability class E	3.700E-03	0.000E+00	---	DFREQ(3,5,3)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,3)

Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,3)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,3)
AIRT	for wind speed class 4 and stability class C	1.440E-03	0.000E+00	---	DFREQ(4,3,3)
AIRT	for wind speed class 4 and stability class D	5.820E-03	0.000E+00	---	DFREQ(4,4,3)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,3)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,3)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,3)
AIRT	for wind speed class 5 and stability class C	1.400E-04	0.000E+00	---	DFREQ(5,3,3)
AIRT	for wind speed class 5 and stability class D	1.300E-03	0.000E+00	---	DFREQ(5,4,3)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,3)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,3)
AIRT	Joint Frequency in NE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,3)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,3)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,3)
AIRT	for wind speed class 6 and stability class D	2.700E-04	0.000E+00	---	DFREQ(6,4,3)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,3)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,3)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 1 and stability class A	2.400E-03	0.000E+00	---	DFREQ(1,1,4)
AIRT	for wind speed class 1 and stability class B	3.510E-03	0.000E+00	---	DFREQ(1,2,4)
AIRT	for wind speed class 1 and stability class C	1.010E-03	0.000E+00	---	DFREQ(1,3,4)
AIRT	for wind speed class 1 and stability class D	1.600E-03	1.000E-01	---	DFREQ(1,4,4)
AIRT	for wind speed class 1 and stability class E	1.367E-02	2.000E-01	---	DFREQ(1,5,4)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 2 and stability class A	8.200E-04	0.000E+00	---	DFREQ(2,1,4)
AIRT	for wind speed class 2 and stability class B	1.780E-03	0.000E+00	---	DFREQ(2,2,4)
AIRT	for wind speed class 2 and stability class C	2.740E-03	0.000E+00	---	DFREQ(2,3,4)
AIRT	for wind speed class 2 and stability class D	1.780E-03	0.000E+00	---	DFREQ(2,4,4)
AIRT	for wind speed class 2 and stability class E	1.075E-02	0.000E+00	---	DFREQ(2,5,4)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,4)
AIRT	Joint Frequency in ENE Sector				

AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,4)
AIRT	for wind speed class 3 and stability class B	1.300E-03	0.000E+00	---	DFREQ(3,2,4)
AIRT	for wind speed class 3 and stability class C	5.000E-03	0.000E+00	---	DFREQ(3,3,4)
AIRT	for wind speed class 3 and stability class D	7.190E-03	0.000E+00	---	DFREQ(3,4,4)
AIRT	for wind speed class 3 and stability class E	4.660E-03	0.000E+00	---	DFREQ(3,5,4)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,4)

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Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,4)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,4)
AIRT	for wind speed class 4 and stability class C	1.230E-03	0.000E+00	---	DFREQ(4,3,4)
AIRT	for wind speed class 4 and stability class D	6.580E-03	0.000E+00	---	DFREQ(4,4,4)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,4)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,4)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,4)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,4)
AIRT	for wind speed class 5 and stability class D	1.580E-03	0.000E+00	---	DFREQ(5,4,4)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,4)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,4)
AIRT	Joint Frequency in ENE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,4)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,4)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,4)
AIRT	for wind speed class 6 and stability class D	6.200E-04	0.000E+00	---	DFREQ(6,4,4)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,4)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,4)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 1 and stability class A	3.690E-03	0.000E+00	---	DFREQ(1,1,5)
AIRT	for wind speed class 1 and stability class B	4.760E-03	0.000E+00	---	DFREQ(1,2,5)
AIRT	for wind speed class 1 and stability class C	1.820E-03	0.000E+00	---	DFREQ(1,3,5)
AIRT	for wind speed class 1 and stability class D	3.430E-03	1.000E-01	---	DFREQ(1,4,5)
AIRT	for wind speed class 1 and stability class E	1.810E-02	2.000E-01	---	DFREQ(1,5,5)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 2 and stability class A	1.030E-03	0.000E+00	---	DFREQ(2,1,5)
AIRT	for wind speed class 2 and stability class B	2.950E-03	0.000E+00	---	DFREQ(2,2,5)

AIRT	for wind speed class 2 and stability class C	4.930E-03	0.000E+00	---	DFREQ(2,3,5)
AIRT	for wind speed class 2 and stability class D	3.900E-03	0.000E+00	---	DFREQ(2,4,5)
AIRT	for wind speed class 2 and stability class E	1.439E-02	0.000E+00	---	DFREQ(2,5,5)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,5)
AIRT	for wind speed class 3 and stability class B	1.710E-03	0.000E+00	---	DFREQ(3,2,5)
AIRT	for wind speed class 3 and stability class C	7.670E-03	0.000E+00	---	DFREQ(3,3,5)
AIRT	for wind speed class 3 and stability class D	1.356E-02	0.000E+00	---	DFREQ(3,4,5)
AIRT	for wind speed class 3 and stability class E	7.120E-03	0.000E+00	---	DFREQ(3,5,5)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,5)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,5)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,5)
AIRT	for wind speed class 4 and stability class C	1.920E-03	0.000E+00	---	DFREQ(4,3,5)
AIRT	for wind speed class 4 and stability class D	2.302E-02	0.000E+00	---	DFREQ(4,4,5)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,5)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,5)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,5)
AIRT	for wind speed class 5 and stability class C	4.800E-04	0.000E+00	---	DFREQ(5,3,5)
AIRT	for wind speed class 5 and stability class D	6.710E-03	0.000E+00	---	DFREQ(5,4,5)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,5)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,5)
AIRT	Joint Frequency in E Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,5)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,5)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,5)
AIRT	for wind speed class 6 and stability class D	1.300E-03	0.000E+00	---	DFREQ(6,4,5)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,5)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,5)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 1 and stability class A	1.450E-03	0.000E+00	---	DFREQ(1,1,6)
AIRT	for wind speed class 1 and stability class B	2.380E-03	0.000E+00	---	DFREQ(1,2,6)
AIRT	for wind speed class 1 and stability class C	4.100E-04	0.000E+00	---	DFREQ(1,3,6)
AIRT	for wind speed class 1 and stability class D	8.500E-04	1.000E-01	---	DFREQ(1,4,6)

AIRT	for wind speed class 1 and stability class E	6.880E-03	2.000E-01	---	DFREQ(1,5,6)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,6)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,6)
AIRT	for wind speed class 2 and stability class C	7.500E-04	0.000E+00	---	DFREQ(2,3,6)
AIRT	for wind speed class 2 and stability class D	1.370E-03	0.000E+00	---	DFREQ(2,4,6)
AIRT	for wind speed class 2 and stability class E	6.100E-03	0.000E+00	---	DFREQ(2,5,6)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,6)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,6)
AIRT	for wind speed class 3 and stability class C	3.220E-03	0.000E+00	---	DFREQ(3,3,6)
AIRT	for wind speed class 3 and stability class D	5.070E-03	0.000E+00	---	DFREQ(3,4,6)
AIRT	for wind speed class 3 and stability class E	4.040E-03	0.000E+00	---	DFREQ(3,5,6)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,6)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,6)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,6)
AIRT	for wind speed class 4 and stability class C	7.500E-04	0.000E+00	---	DFREQ(4,3,6)
AIRT	for wind speed class 4 and stability class D	1.233E-02	0.000E+00	---	DFREQ(4,4,6)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,6)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,6)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,6)
AIRT	for wind speed class 5 and stability class C	2.100E-04	0.000E+00	---	DFREQ(5,3,6)
AIRT	for wind speed class 5 and stability class D	4.520E-03	0.000E+00	---	DFREQ(5,4,6)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,6)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,6)
AIRT	Joint Frequency in ESE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,6)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,6)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,6)
AIRT	for wind speed class 6 and stability class D	8.200E-04	0.000E+00	---	DFREQ(6,4,6)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,6)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,6)

AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 1 and stability class A	7.200E-04	0.000E+00	---	DFREQ(1,1,7)
AIRT	for wind speed class 1 and stability class B	9.500E-04	0.000E+00	---	DFREQ(1,2,7)
AIRT	for wind speed class 1 and stability class C	1.300E-04	0.000E+00	---	DFREQ(1,3,7)
AIRT	for wind speed class 1 and stability class D	4.400E-04	1.000E-01	---	DFREQ(1,4,7)
AIRT	for wind speed class 1 and stability class E	4.720E-03	2.000E-01	---	DFREQ(1,5,7)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,7)
AIRT	for wind speed class 2 and stability class B	5.500E-04	0.000E+00	---	DFREQ(2,2,7)
AIRT	for wind speed class 2 and stability class C	6.200E-04	0.000E+00	---	DFREQ(2,3,7)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,7)
AIRT	for wind speed class 2 and stability class E	3.560E-03	0.000E+00	---	DFREQ(2,5,7)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,7)
AIRT	for wind speed class 3 and stability class B	2.700E-04	0.000E+00	---	DFREQ(3,2,7)
AIRT	for wind speed class 3 and stability class C	1.230E-03	0.000E+00	---	DFREQ(3,3,7)
AIRT	for wind speed class 3 and stability class D	3.220E-03	0.000E+00	---	DFREQ(3,4,7)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,7)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,7)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,7)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,7)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,7)
AIRT	for wind speed class 4 and stability class D	5.480E-03	0.000E+00	---	DFREQ(4,4,7)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,7)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,7)
AIRT	Joint Frequency in SE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,7)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,7)
AIRT	for wind speed class 5 and stability class C	7.000E-05	0.000E+00	---	DFREQ(5,3,7)
AIRT	for wind speed class 5 and stability class D	1.920E-03	0.000E+00	---	DFREQ(5,4,7)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,7)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,7)
AIRT	Joint Frequency in SE Sector				

AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,7)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,7)
AIRT	for wind speed class 6 and stability class C	7.000E-05	0.000E+00	---	DFREQ(6,3,7)
AIRT	for wind speed class 6 and stability class D	4.100E-04	0.000E+00	---	DFREQ(6,4,7)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,7)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,7)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 1 and stability class A	2.900E-04	0.000E+00	---	DFREQ(1,1,8)
AIRT	for wind speed class 1 and stability class B	7.800E-04	0.000E+00	---	DFREQ(1,2,8)
AIRT	for wind speed class 1 and stability class C	2.400E-04	0.000E+00	---	DFREQ(1,3,8)
AIRT	for wind speed class 1 and stability class D	5.500E-04	1.000E-01	---	DFREQ(1,4,8)
AIRT	for wind speed class 1 and stability class E	4.480E-03	2.000E-01	---	DFREQ(1,5,8)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 2 and stability class A	1.400E-04	0.000E+00	---	DFREQ(2,1,8)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,8)
AIRT	for wind speed class 2 and stability class C	3.400E-04	0.000E+00	---	DFREQ(2,3,8)
AIRT	for wind speed class 2 and stability class D	4.100E-04	0.000E+00	---	DFREQ(2,4,8)
AIRT	for wind speed class 2 and stability class E	3.150E-03	0.000E+00	---	DFREQ(2,5,8)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,8)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,8)
AIRT	for wind speed class 3 and stability class C	4.100E-04	0.000E+00	---	DFREQ(3,3,8)
AIRT	for wind speed class 3 and stability class D	1.300E-03	0.000E+00	---	DFREQ(3,4,8)
AIRT	for wind speed class 3 and stability class E	1.990E-03	0.000E+00	---	DFREQ(3,5,8)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,8)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,8)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,8)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,8)
AIRT	for wind speed class 4 and stability class D	2.330E-03	0.000E+00	---	DFREQ(4,4,8)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,8)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,8)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,8)

AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,8)
AIRT	for wind speed class 5 and stability class D	9.600E-04	0.000E+00	---	DFREQ(5,4,8)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,8)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,8)
AIRT	Joint Frequency in SSE Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,8)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,8)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,8)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,8)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,8)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,8)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 1 and stability class A	1.720E-03	0.000E+00	---	DFREQ(1,1,9)
AIRT	for wind speed class 1 and stability class B	1.060E-03	0.000E+00	---	DFREQ(1,2,9)
AIRT	for wind speed class 1 and stability class C	6.400E-04	0.000E+00	---	DFREQ(1,3,9)
AIRT	for wind speed class 1 and stability class D	1.480E-03	1.000E-01	---	DFREQ(1,4,9)
AIRT	for wind speed class 1 and stability class E	1.811E-02	2.000E-01	---	DFREQ(1,5,9)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 2 and stability class A	0.000E+00	0.000E+00	---	DFREQ(2,1,9)
AIRT	for wind speed class 2 and stability class B	2.100E-04	0.000E+00	---	DFREQ(2,2,9)
AIRT	for wind speed class 2 and stability class C	2.700E-04	0.000E+00	---	DFREQ(2,3,9)
AIRT	for wind speed class 2 and stability class D	1.030E-03	0.000E+00	---	DFREQ(2,4,9)
AIRT	for wind speed class 2 and stability class E	1.219E-02	0.000E+00	---	DFREQ(2,5,9)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,9)
AIRT	for wind speed class 3 and stability class B	7.000E-05	0.000E+00	---	DFREQ(3,2,9)
AIRT	for wind speed class 3 and stability class C	5.500E-04	0.000E+00	---	DFREQ(3,3,9)
AIRT	for wind speed class 3 and stability class D	2.670E-03	0.000E+00	---	DFREQ(3,4,9)
AIRT	for wind speed class 3 and stability class E	2.470E-03	0.000E+00	---	DFREQ(3,5,9)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,9)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,9)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,9)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,9)
AIRT	for wind speed class 4 and stability class D	1.850E-03	0.000E+00	---	DFREQ(4,4,9)

AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,9)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,9)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,9)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,9)
AIRT	for wind speed class 5 and stability class D	7.500E-04	0.000E+00	---	DFREQ(5,4,9)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,9)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,9)
AIRT	Joint Frequency in S Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,9)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,9)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,9)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,9)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,9)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,9)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 1 and stability class A	7.900E-04	0.000E+00	---	DFREQ(1,1,10)
AIRT	for wind speed class 1 and stability class B	5.500E-04	0.000E+00	---	DFREQ(1,2,10)
AIRT	for wind speed class 1 and stability class C	2.100E-04	0.000E+00	---	DFREQ(1,3,10)
AIRT	for wind speed class 1 and stability class D	7.200E-04	1.000E-01	---	DFREQ(1,4,10)
AIRT	for wind speed class 1 and stability class E	1.856E-02	2.000E-01	---	DFREQ(1,5,10)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 2 and stability class A	7.000E-05	0.000E+00	---	DFREQ(2,1,10)
AIRT	for wind speed class 2 and stability class B	1.400E-04	0.000E+00	---	DFREQ(2,2,10)
AIRT	for wind speed class 2 and stability class C	2.100E-04	0.000E+00	---	DFREQ(2,3,10)
AIRT	for wind speed class 2 and stability class D	8.200E-04	0.000E+00	---	DFREQ(2,4,10)
AIRT	for wind speed class 2 and stability class E	1.349E-02	0.000E+00	---	DFREQ(2,5,10)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,10)
AIRT	for wind speed class 3 and stability class B	0.000E+00	0.000E+00	---	DFREQ(3,2,10)
AIRT	for wind speed class 3 and stability class C	1.400E-04	0.000E+00	---	DFREQ(3,3,10)
AIRT	for wind speed class 3 and stability class D	1.990E-03	0.000E+00	---	DFREQ(3,4,10)
AIRT	for wind speed class 3 and stability class E	2.810E-03	0.000E+00	---	DFREQ(3,5,10)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,10)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	RESRAD computed	Parameter Name
Menu					

AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,10)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,10)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,10)
AIRT	for wind speed class 4 and stability class D	1.230E-03	0.000E+00	---	DFREQ(4,4,10)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,10)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,10)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,10)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,10)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,10)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,10)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,10)
AIRT	Joint Frequency in SSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,10)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,10)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,10)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,10)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,10)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,10)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,11)
AIRT	for wind speed class 1 and stability class B	3.270E-03	0.000E+00	---	DFREQ(1,2,11)
AIRT	for wind speed class 1 and stability class C	1.400E-03	0.000E+00	---	DFREQ(1,3,11)
AIRT	for wind speed class 1 and stability class D	2.700E-03	1.000E-01	---	DFREQ(1,4,11)
AIRT	for wind speed class 1 and stability class E	4.608E-02	2.000E-01	---	DFREQ(1,5,11)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,11)
AIRT	for wind speed class 2 and stability class B	1.100E-03	0.000E+00	---	DFREQ(2,2,11)
AIRT	for wind speed class 2 and stability class C	3.010E-03	0.000E+00	---	DFREQ(2,3,11)
AIRT	for wind speed class 2 and stability class D	4.250E-03	0.000E+00	---	DFREQ(2,4,11)
AIRT	for wind speed class 2 and stability class E	3.220E-02	0.000E+00	---	DFREQ(2,5,11)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,11)
AIRT	for wind speed class 3 and stability class B	4.800E-04	0.000E+00	---	DFREQ(3,2,11)
AIRT	for wind speed class 3 and stability class C	1.580E-03	0.000E+00	---	DFREQ(3,3,11)
AIRT	for wind speed class 3 and stability class D	5.210E-03	0.000E+00	---	DFREQ(3,4,11)
AIRT	for wind speed class 3 and stability class E	6.510E-03	0.000E+00	---	DFREQ(3,5,11)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,11)

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,11)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,11)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,11)
AIRT	for wind speed class 4 and stability class D	1.580E-03	0.000E+00	---	DFREQ(4,4,11)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,11)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,11)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,11)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,11)
AIRT	for wind speed class 5 and stability class D	4.100E-04	0.000E+00	---	DFREQ(5,4,11)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,11)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,11)
AIRT	Joint Frequency in SW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,11)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,11)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,11)
AIRT	for wind speed class 6 and stability class D	7.000E-05	0.000E+00	---	DFREQ(6,4,11)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,11)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,11)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 1 and stability class A	1.380E-03	0.000E+00	---	DFREQ(1,1,12)
AIRT	for wind speed class 1 and stability class B	2.630E-03	0.000E+00	---	DFREQ(1,2,12)
AIRT	for wind speed class 1 and stability class C	2.360E-03	0.000E+00	---	DFREQ(1,3,12)
AIRT	for wind speed class 1 and stability class D	2.470E-03	1.000E-01	---	DFREQ(1,4,12)
AIRT	for wind speed class 1 and stability class E	2.959E-02	2.000E-01	---	DFREQ(1,5,12)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,12)
AIRT	for wind speed class 2 and stability class B	8.200E-04	0.000E+00	---	DFREQ(2,2,12)
AIRT	for wind speed class 2 and stability class C	4.380E-03	0.000E+00	---	DFREQ(2,3,12)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,12)
AIRT	for wind speed class 2 and stability class E	2.699E-02	0.000E+00	---	DFREQ(2,5,12)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,12)
AIRT	for wind speed class 3 and stability class B	3.400E-04	0.000E+00	---	DFREQ(3,2,12)

AIRT	for wind speed class 3 and stability class C	2.810E-03	0.000E+00	---	DFREQ(3,3,12)
AIRT	for wind speed class 3 and stability class D	7.880E-03	0.000E+00	---	DFREQ(3,4,12)
AIRT	for wind speed class 3 and stability class E	8.430E-03	0.000E+00	---	DFREQ(3,5,12)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,12)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,12)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,12)
AIRT	for wind speed class 4 and stability class D	2.530E-03	0.000E+00	---	DFREQ(4,4,12)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,12)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,12)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,12)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,12)
AIRT	for wind speed class 5 and stability class D	3.400E-04	0.000E+00	---	DFREQ(5,4,12)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,12)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,12)
AIRT	Joint Frequency in WSW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,12)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,12)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,12)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,12)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,12)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,12)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 1 and stability class A	3.100E-03	0.000E+00	---	DFREQ(1,1,13)
AIRT	for wind speed class 1 and stability class B	9.330E-03	0.000E+00	---	DFREQ(1,2,13)
AIRT	for wind speed class 1 and stability class C	5.110E-03	0.000E+00	---	DFREQ(1,3,13)
AIRT	for wind speed class 1 and stability class D	5.200E-03	1.000E-01	---	DFREQ(1,4,13)
AIRT	for wind speed class 1 and stability class E	3.010E-02	2.000E-01	---	DFREQ(1,5,13)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 2 and stability class A	5.500E-04	0.000E+00	---	DFREQ(2,1,13)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,13)
AIRT	for wind speed class 2 and stability class C	1.630E-02	0.000E+00	---	DFREQ(2,3,13)
AIRT	for wind speed class 2 and stability class D	9.660E-03	0.000E+00	---	DFREQ(2,4,13)

AIRT	for wind speed class 2 and stability class E	2.877E-02	0.000E+00	---	DFREQ(2,5,13)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,13)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,13)
AIRT	for wind speed class 3 and stability class C	8.840E-03	0.000E+00	---	DFREQ(3,3,13)
AIRT	for wind speed class 3 and stability class D	1.617E-02	0.000E+00	---	DFREQ(3,4,13)
AIRT	for wind speed class 3 and stability class E	1.158E-02	0.000E+00	---	DFREQ(3,5,13)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,13)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,13)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,13)
AIRT	for wind speed class 4 and stability class C	7.000E-05	0.000E+00	---	DFREQ(4,3,13)
AIRT	for wind speed class 4 and stability class D	4.180E-03	0.000E+00	---	DFREQ(4,4,13)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,13)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,13)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,13)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,13)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,13)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,13)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,13)
AIRT	Joint Frequency in W Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,13)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,13)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,13)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,13)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,13)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,13)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 1 and stability class A	3.670E-03	0.000E+00	---	DFREQ(1,1,14)
AIRT	for wind speed class 1 and stability class B	6.460E-03	0.000E+00	---	DFREQ(1,2,14)
AIRT	for wind speed class 1 and stability class C	1.840E-03	0.000E+00	---	DFREQ(1,3,14)
AIRT	for wind speed class 1 and stability class D	2.090E-03	1.000E-01	---	DFREQ(1,4,14)
AIRT	for wind speed class 1 and stability class E	6.400E-03	2.000E-01	---	DFREQ(1,5,14)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,14)

AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 2 and stability class A	6.200E-04	0.000E+00	---	DFREQ(2,1,14)
AIRT	for wind speed class 2 and stability class B	2.740E-03	0.000E+00	---	DFREQ(2,2,14)
AIRT	for wind speed class 2 and stability class C	5.820E-03	0.000E+00	---	DFREQ(2,3,14)
AIRT	for wind speed class 2 and stability class D	3.700E-03	0.000E+00	---	DFREQ(2,4,14)
AIRT	for wind speed class 2 and stability class E	6.580E-03	0.000E+00	---	DFREQ(2,5,14)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,14)
AIRT	for wind speed class 3 and stability class B	7.500E-04	0.000E+00	---	DFREQ(3,2,14)
AIRT	for wind speed class 3 and stability class C	4.590E-03	0.000E+00	---	DFREQ(3,3,14)
AIRT	for wind speed class 3 and stability class D	8.010E-03	0.000E+00	---	DFREQ(3,4,14)
AIRT	for wind speed class 3 and stability class E	2.530E-03	0.000E+00	---	DFREQ(3,5,14)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,14)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,14)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,14)
AIRT	for wind speed class 4 and stability class C	0.000E+00	0.000E+00	---	DFREQ(4,3,14)
AIRT	for wind speed class 4 and stability class D	2.740E-03	0.000E+00	---	DFREQ(4,4,14)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,14)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,14)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,14)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,14)
AIRT	for wind speed class 5 and stability class D	1.400E-04	0.000E+00	---	DFREQ(5,4,14)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,14)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,14)
AIRT	Joint Frequency in WNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,14)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,14)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,14)
AIRT	for wind speed class 6 and stability class D	0.000E+00	0.000E+00	---	DFREQ(6,4,14)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,14)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,14)
AIRT	Joint Frequency in NW Sector				

AIRT	for wind speed class 1 and stability class A	4.410E-03	0.000E+00	---	DFREQ(1,1,15)
AIRT	for wind speed class 1 and stability class B	4.840E-03	0.000E+00	---	DFREQ(1,2,15)
AIRT	for wind speed class 1 and stability class C	1.100E-03	0.000E+00	---	DFREQ(1,3,15)
AIRT	for wind speed class 1 and stability class D	1.460E-03	1.000E-01	---	DFREQ(1,4,15)
AIRT	for wind speed class 1 and stability class E	3.830E-03	2.000E-01	---	DFREQ(1,5,15)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 2 and stability class A	1.160E-03	0.000E+00	---	DFREQ(2,1,15)
AIRT	for wind speed class 2 and stability class B	2.060E-03	0.000E+00	---	DFREQ(2,2,15)
AIRT	for wind speed class 2 and stability class C	3.560E-03	0.000E+00	---	DFREQ(2,3,15)
AIRT	for wind speed class 2 and stability class D	2.400E-03	0.000E+00	---	DFREQ(2,4,15)
AIRT	for wind speed class 2 and stability class E	2.600E-03	0.000E+00	---	DFREQ(2,5,15)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,15)
AIRT	for wind speed class 3 and stability class B	6.200E-04	0.000E+00	---	DFREQ(3,2,15)
AIRT	for wind speed class 3 and stability class C	3.010E-03	0.000E+00	---	DFREQ(3,3,15)
AIRT	for wind speed class 3 and stability class D	3.770E-03	0.000E+00	---	DFREQ(3,4,15)
AIRT	for wind speed class 3 and stability class E	1.440E-03	0.000E+00	---	DFREQ(3,5,15)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,15)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,15)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,15)
AIRT	for wind speed class 4 and stability class C	1.400E-04	0.000E+00	---	DFREQ(4,3,15)
AIRT	for wind speed class 4 and stability class D	1.710E-03	0.000E+00	---	DFREQ(4,4,15)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,15)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,15)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,15)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,15)
AIRT	for wind speed class 5 and stability class D	2.100E-04	0.000E+00	---	DFREQ(5,4,15)
AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,15)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,15)
AIRT	Joint Frequency in NW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,15)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,15)

AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,15)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,15)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,15)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,15)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 1 and stability class A	1.880E-03	0.000E+00	---	DFREQ(1,1,16)
AIRT	for wind speed class 1 and stability class B	3.180E-03	0.000E+00	---	DFREQ(1,2,16)
AIRT	for wind speed class 1 and stability class C	7.100E-04	0.000E+00	---	DFREQ(1,3,16)
AIRT	for wind speed class 1 and stability class D	5.400E-04	1.000E-01	---	DFREQ(1,4,16)
AIRT	for wind speed class 1 and stability class E	1.810E-03	2.000E-01	---	DFREQ(1,5,16)
AIRT	for wind speed class 1 and stability class F	0.000E+00	7.000E-01	---	DFREQ(1,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 2 and stability class A	4.800E-04	0.000E+00	---	DFREQ(2,1,16)
AIRT	for wind speed class 2 and stability class B	1.300E-03	0.000E+00	---	DFREQ(2,2,16)
AIRT	for wind speed class 2 and stability class C	9.600E-04	0.000E+00	---	DFREQ(2,3,16)
AIRT	for wind speed class 2 and stability class D	6.200E-04	0.000E+00	---	DFREQ(2,4,16)
AIRT	for wind speed class 2 and stability class E	1.030E-03	0.000E+00	---	DFREQ(2,5,16)
AIRT	for wind speed class 2 and stability class F	0.000E+00	0.000E+00	---	DFREQ(2,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 3 and stability class A	0.000E+00	0.000E+00	---	DFREQ(3,1,16)
AIRT	for wind speed class 3 and stability class B	6.900E-04	0.000E+00	---	DFREQ(3,2,16)
AIRT	for wind speed class 3 and stability class C	1.300E-03	0.000E+00	---	DFREQ(3,3,16)
AIRT	for wind speed class 3 and stability class D	1.510E-03	0.000E+00	---	DFREQ(3,4,16)
AIRT	for wind speed class 3 and stability class E	2.700E-04	0.000E+00	---	DFREQ(3,5,16)
AIRT	for wind speed class 3 and stability class F	0.000E+00	0.000E+00	---	DFREQ(3,6,16)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 4 and stability class A	0.000E+00	0.000E+00	---	DFREQ(4,1,16)
AIRT	for wind speed class 4 and stability class B	0.000E+00	0.000E+00	---	DFREQ(4,2,16)
AIRT	for wind speed class 4 and stability class C	4.800E-04	0.000E+00	---	DFREQ(4,3,16)
AIRT	for wind speed class 4 and stability class D	1.100E-03	0.000E+00	---	DFREQ(4,4,16)
AIRT	for wind speed class 4 and stability class E	0.000E+00	0.000E+00	---	DFREQ(4,5,16)
AIRT	for wind speed class 4 and stability class F	0.000E+00	0.000E+00	---	DFREQ(4,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 5 and stability class A	0.000E+00	0.000E+00	---	DFREQ(5,1,16)
AIRT	for wind speed class 5 and stability class B	0.000E+00	0.000E+00	---	DFREQ(5,2,16)
AIRT	for wind speed class 5 and stability class C	0.000E+00	0.000E+00	---	DFREQ(5,3,16)
AIRT	for wind speed class 5 and stability class D	2.700E-04	0.000E+00	---	DFREQ(5,4,16)

AIRT	for wind speed class 5 and stability class E	0.000E+00	0.000E+00	---	DFREQ(5,5,16)
AIRT	for wind speed class 5 and stability class F	0.000E+00	0.000E+00	---	DFREQ(5,6,16)
AIRT	Joint Frequency in NNW Sector				
AIRT	for wind speed class 6 and stability class A	0.000E+00	0.000E+00	---	DFREQ(6,1,16)
AIRT	for wind speed class 6 and stability class B	0.000E+00	0.000E+00	---	DFREQ(6,2,16)
AIRT	for wind speed class 6 and stability class C	0.000E+00	0.000E+00	---	DFREQ(6,3,16)
AIRT	for wind speed class 6 and stability class D	1.400E-04	0.000E+00	---	DFREQ(6,4,16)
AIRT	for wind speed class 6 and stability class E	0.000E+00	0.000E+00	---	DFREQ(6,5,16)
AIRT	for wind speed class 6 and stability class F	0.000E+00	0.000E+00	---	DFREQ(6,6,16)
AIRT	Average annual wind speed (m/sec)	2.953E+00	8.900E-01	---	WIND
AIRT	Spacing of points used for areal integration, (m)	1.000E+01	1.000E+01	---	ATGRID
GWTR	convergence criterion for groundwater transport calc	1.000E-03	1.000E-03	---	EPS
GWTR	Distance from d/g edge of contamination to Well, (m)	-1.000E+00	1.000E+02	---	OFFFLPAQW
GWTR	Contamination to Well c/c distance normal to flow, m	0.000E+00	0.000E+00	---	OFFFLNAQW
GWTR	Distance from d/g edge of cz to surface water, (m)	4.837E+02	4.500E+02	---	OFFFLPAQS
GWTR	Contamination to near edge of swb,c/c normal to flow	-4.175E+02	-1.500E+02	---	OFFFLNAQSN
GWTR	Contamination to far edge of swb, c/c normal to flow	-1.175E+02	1.500E+02	---	OFFFLNAQSF
GWTR	Number of main sub zones in contaminated medium	1	1	---	NPCM
GWTR	Number of minor sub zones in last main CM sub zone	1	1	---	NPCMF
GWTR	Number of main sub zones in primary contamination	1	1	---	NPCZ
GWTR	Number of minor sub zones in last main PC sub zone	1	1	---	NPCZF
GWTR	Number of main sub zones in submerged prim. contami.	1	1	---	NSPCZ
GWTR	Number of minor sub zones in last main SPC sub zone	1	1	---	NSPCZF
GWTR	Number of main sub zones in each unsaturated stratum	1	1	---	NPSS
GWTR	Number of minor sub zones in last main UZ sub zone	1	1	---	NPSSF
GWTR	Number of main sub zones in saturated stratum	1	1	---	NAQS
GWTR	Number of minor sub zones in last main SZ sub zone	1	1	---	NAQSF
GWTR	Distribution coefficient and longitudinal dispersion	1	1	---	

1 = Nuclide specific distrubution coefficients in all subzones. Longitudinal dispersion in all but the subzone of transformation.

GWTR	Retardation factor flag for groundwater transport	0	0	---	
------	---	---	---	-----	--

0 = (total porosity + distribution coefficient*dry bulk density) / total porosity

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
USZN	Number of unsaturated zone strata	1	1	---	NS
USZN	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
USZN	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
USZN	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
USZN	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
USZN	Unsat. zone 1, field capacity	3.000E-01	3.000E-01	---	FCUZ(1)
USZN	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)

USZN	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
USZN	Unsat. zone 1, longitudinal dispersivity (m)	1.000E-01	1.000E-01	---	ALPHALU (1)
SZNE	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
SZNE	Depth of aquifer contributing to surface water body	5.000E+00	5.000E+00	---	DPTHAQSW
SZNE	Thickness of saturated zone (m)	1.000E+02	1.000E+02	---	DPTHAQ
SZNE	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
SZNE	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
SZNE	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
SZNE	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
SZNE	Saturated zone hydraulic gradient to well	4.000E-03	2.000E-02	---	HGW
SZNE	Satur. zone hydraulic gradient to surface water body	4.000E-03	2.000E-02	---	HGSW
SZNE	longitudinal dispersivity to well (m)	3.000E+00	3.000E+00	---	ALPHALOW
SZNE	longitudinal dispersivity to SWB (m)	1.000E+01	1.000E+01	---	ALPHALOSW
SZNE	lateral (horizontal) dispersivity to well (m)	4.000E-01	4.000E-01	---	ALPHATW
SZNE	lateral (horizontal) dispersivity to SWB (m)	1.000E+00	1.000E+00	---	ALPHATSW
SZNE	lateral (vertical) dispersivity to well (m)	2.000E-02	2.000E-02	---	ALPHAVW
SZNE	lateral (vertical) dispersivity to SWB (m)	6.000E-02	6.000E-02	---	ALPHAVSW
SZNE	Irrigation rate over aquifer to well (m/yr)	not used	0.000E+00	---	RIAQW
SZNE	Irrigation rate over aquifer to SWB (m/yr)	not used	0.000E+00	---	RIAQSW
SZNE	Evapotranspiration coefficient over aquifer to well	not used	1.000E+00	---	EVAPTRAQW
SZNE	Evapotranspiration coefficient over aquifer to SWB	not used	1.000E+00	---	EVAPTRAQSW
SZNE	Runoff coefficient over aquifer to well	not used	1.000E+00	---	RUNOFFAQW
SZNE	Runoff coefficient over aquifer to SWB	not used	1.000E+00	---	RUNOFFAQSW
SZNE	Concentration of mobile colloids in the aquifer	0.000E+00	0.000E+00	---	CCOL
SZNE	Water - Soil Distribution coefficient of colloids	0.000E+00	0.000E+00	---	K1Col
SZNE	Water - Mobile Colloids Distribution coefficient	0.000E+00	0.000E+00	---	K3Col
WTRU	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
WTRU	Fraction of drinking water from surface water	0.000E+00	0.000E+00	---	FSWD
WTRU	Fraction of drinking water from well water	1.000E+00	1.000E+00	---	FWWD
WTRU	Fraction of household water from surface water	0.000E+00	0.000E+00	---	FSWHH
WTRU	Fraction of household water from well water	1.000E+00	1.000E+00	---	FWWHH
WTRU	Livestock water intake for meat 1 (L/day)	5.000E+01	5.000E+01	---	LWI (1)
WTRU	Fraction of livestock water 1 from surface water	0.000E+00	0.000E+00	---	FSWLV (1)
WTRU	Fraction of livestock water 1 from well water	1.000E+00	1.000E+00	---	FWWL (1)
WTRU	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI (2)
WTRU	Fraction of dairy cow water from surface water	0.000E+00	0.000E+00	---	FSWLV (2)
WTRU	Fraction of dairy cow water from well water	1.000E+00	1.000E+00	---	FWWL (2)
WTRU	Irrigation rate in Agricultural Area 1 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG (1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
	WTRU	Fraction of irrigation water 1 from surface water	0.000E+00	0.000E+00	---	FSWIR (1)

WTRU	Fraction of irrigation water 1 from well water	1.000E+00	1.000E+00	---	FWWIR(1)
WTRU	Irrigation rate in Agricultural Area 2 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(2)
WTRU	Fraction of irrigation water 2 from surface water	0.000E+00	0.000E+00	---	FSWIR(2)
WTRU	Fraction of irrigation water 2 from well water	1.000E+00	1.000E+00	---	FWWIR(2)
WTRU	Irrigation rate in Agricultural Area 3 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(3)
WTRU	Fraction of irrigation water 3 from surface water	0.000E+00	0.000E+00	---	FSWIR(3)
WTRU	Fraction of irrigation water 3 from well water	1.000E+00	1.000E+00	---	FWWIR(3)
WTRU	Irrigation rate in Agricultural Area 4 (m/yr)	2.000E-01	2.000E-01	---	RIRRIG(4)
WTRU	Fraction of irrigation water 4 from surface water	0.000E+00	0.000E+00	---	FSWIR(4)
WTRU	Fraction of irrigation water 4 from well water	1.000E+00	1.000E+00	---	FWWIR(4)
WTRU	Irrigation rate in Offsite dwelling site (m/yr)	2.000E-01	2.000E-01	---	RIRRIGDWELL
WTRU	Fraction of irrigation water from surface water	0.000E+00	0.000E+00	---	FSWIRDWELL
WTRU	Fraction of irrigation water from well water	1.000E+00	1.000E+00	---	FWWIRDWELL
WTRU	Well pumping rate (m**3/yr)	5.264E+03	5.100E+03	---	UW
SWBY	Surface area of water in surface water body, m**2	9.000E+04	9.000E+04	---	ALAKE
SWBY	Volume of surface water body, m**3	1.500E+05	1.500E+05	---	VLAKE
SWBY	Potential evaporation, m/y	1.000E+00	1.000E+00	---	EVAPOT
SWBY	Stream outflow as a fraction of seepage+stm outflows	9.980E-01	9.983E-01	---	FSTMFLOW
SWBY	Use inflow ratio for outflow ratio, 1 yes, 0 no	1	1	---	FSTMFLOWIN
SWBY	Settling velocity of suspended sediments, cm/s	1.000E-01	1.000E-01	---	Vsettle
SWBY	Dry bulk density of bottom sediments, g/cm**3	1.500E+00	1.500E+00	---	RhobSed
SWBY	Thickness of bottom sediment absorbing nuclides, m	5.000E-02	5.000E-02	---	ThickSed
SWBY	Number of distinct catchments	1	1	---	NCATCH
SWBY	Catchment 1, smaller X coordinate (m)	-1.450E+03	-1.450E+03	---	CATCHXY(1,1)
SWBY	Catchment 1, larger X coordinate (m)	1.550E+03	1.550E+03	---	CATCHXY(2,1)
SWBY	Catchment 1, smaller Y coordinate (m)	-2.450E+03	-2.450E+03	---	CATCHXY(3,1)
SWBY	Catchment 1, larger Y coordinate (m)	5.500E+02	5.500E+02	---	CATCHXY(4,1)
SWBY	Catchment 1, area, m**2	9.000E+06	9.000E+06	---	AREACA(1)
SWBY	Catchment 1, runoff coefficient	2.000E-01	2.000E-01	---	RUNOFFCA(1)
SWBY	Catchment 1, soil erodibility factor, tons/acre	4.000E-01	4.000E-01	---	ERODIBILITYCA(1)
SWBY	Catchment 1, Slope-length-steepness factor	4.000E-01	4.000E-01	---	SLPLENSTPCA(1)
SWBY	Catchment 1, Cover and management factor	3.000E-03	3.000E-03	---	CRPMANGCA(1)
SWBY	Catchment 1, support practice factor	1.000E+00	1.000E+00	---	CONVPRACCA(1)
SWBY	Catchment 1, sediment delivery ratio	2.121E-01	2.121E-01	---	SDRCA(1)
SWBY	Catchment 1, use SRD - Area correlation, 1 yes, 0 no	1	1	---	SDRACOR
SWBY	Catchment 1, deposited radionuclide delivery ratio	2.000E-02	2.000E-02	---	DDRCA(1)
SWBY	Compute atmospheric deposition on catchment	yes	no	---	ComputeDep
SWBY	Convergence criterion for deposition calculations	1.000E-03	1.000E-03	---	ConvCritAtm
INGE	Fish consumption (kg/yr)	not used	5.400E+00	---	DFI(1)
INGE	Fraction of Fish from affected area	not used	5.000E-01	---	FFISH(1)
INGE	Other Aquatic food consumption (kg/yr)	not used	9.000E-01	---	DFI(2)
INGE	Fraction of Aquatic food from affected area	not used	5.000E-01	---	FFISH(2)
INGE	Non-Leafy vegetables consumption (kg/yr)	1.600E+02	1.600E+02	---	DVI(1)
INGE	Fraction of vegetable 1 from affected area	5.000E-01	5.000E-01	---	FVEG(1)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INGE	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DVI (2)
INGE	Fraction of vegetable 2 from affected area	5.000E-01	5.000E-01	---	FVEG (2)
INGE	Meat 1 consumption (kg/yr)	6.300E+01	6.300E+01	---	DMI (1)
INGE	Fraction of meat 1 from affected area	1.000E+00	1.000E+00	---	FMEMI (1)
INGE	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DMI (2)
INGE	Fraction of milk from affected area	1.000E+00	1.000E+00	---	FMEMI (2)
INGE	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
VEGE	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (1)
VEGE	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	GROWTIME (1)
VEGE	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	FOLI_F (1)
VEGE	Weathering Removal Constant for Non-Leafy	2.000E+01	2.000E+01	---	RWEATHER (1)
VEGE	Foliar Interception Fraction for dust Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,1)
VEGE	Foliar Interception-n Fract-n for irrigation Non-Leafy	2.500E-01	2.500E-01	---	FINTCEPT (1,2)
VEGE	Depth of roots for Non-Leafy (m)	1.200E+00	1.200E+00	---	DROOT (1)
VEGE	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YIELD (2)
VEGE	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	GROWTIME (2)
VEGE	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	FOLI_F (2)
VEGE	Weathering Removal Constant for Leafy	2.000E+01	2.000E+01	---	RWEATHER (2)
VEGE	Foliar Interception Fraction for dust Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,1)
VEGE	Foliar Interception-n Fract-n for irrigation Leafy	2.500E-01	2.500E-01	---	FINTCEPT (2,2)
VEGE	Depth of roots for Leafy (m)	9.000E-01	9.000E-01	---	DROOT (2)
VEGE	Wet weight crop yield for Pasture (kg/m**2)	1.100E+00	1.100E+00	---	YIELD (3)
VEGE	Growing Season for Pasture (years)	8.000E-02	8.000E-02	---	GROWTIME (3)
VEGE	Translocation Factor for Pasture	1.000E+00	1.000E+00	---	FOLI_F (3)
VEGE	Weathering Removal Constant for Pasture	2.000E+01	2.000E+01	---	RWEATHER (3)
VEGE	Foliar Interception Fraction for dust Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,1)
VEGE	Foliar Interception-n Fract-n for irrigation Pasture	2.500E-01	2.500E-01	---	FINTCEPT (3,2)
VEGE	Depth of roots for Pasture (m)	9.000E-01	9.000E-01	---	DROOT (3)
VEGE	Wet weight crop yield for Grain (kg/m**2)	7.000E-01	7.000E-01	---	YIELD (4)
VEGE	Growing Season for Grain (years)	1.700E-01	1.700E-01	---	GROWTIME (4)
VEGE	Translocation Factor for Grain	1.000E-01	1.000E-01	---	FOLI_F (4)
VEGE	Weathering Removal Constant for Grain	2.000E+01	2.000E+01	---	RWEATHER (4)
VEGE	Foliar Interception Fraction for dust Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,1)
VEGE	Foliar Interception-n Fract-n for irrigation Grain	2.500E-01	2.500E-01	---	FINTCEPT (4,2)
VEGE	Depth of roots for Grain (m)	1.200E+00	1.200E+00	---	DROOT (4)
LINT	Feed 1 intake by livestock 1 (kg/day)	1.400E+01	1.400E+01	---	LFI (1,1)
LINT	Soil intake with feed 1 by livestock 1 (kg/day)	1.000E-01	1.000E-01	---	LSI (1,1)
LINT	Feed 1 intake by dairy cow (kg/day)	4.400E+01	4.400E+01	---	LFI (2,1)
LINT	Soil intake with feed 1 by dairy cow (kg/day)	4.000E-01	4.000E-01	---	LSI (2,1)
LINT	Feed 2 intake by livestock 1 (kg/day)	5.400E+01	5.400E+01	---	LFI (1,2)
LINT	Soil intake with feed 2 by livestock 1 (kg/day)	4.000E-01	4.000E-01	---	LSI (1,2)
LINT	Feed 2 intake by dairy cow (kg/day)	1.100E+01	1.100E+01	---	LFI (2,2)
LINT	Soil intake with feed 2 by dairy cow (kg/day)	1.000E-01	1.000E-01	---	LSI (2,2)

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
INHE	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---	INHALR
INHE	Mass loading of all particulates from Primary contam	1.750E-02	1.000E-04	---	MLFD
INHE	Respirable particulates as a fraction of total	1.000E+00	1.000E+00	---	RESPFRACPC
INHE	Offsite mass loading same as onsite mass loading?	0.000E+00		---	SAMEMLRF
INHE	Total mass loading at agricultural area 1 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(1)
INHE	Respirable fraction at agricultural area 1	1.000E+00	1.000E+00	---	RESPFRACOF(1)
INHE	Total mass loading at agricultural area 2 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(2)
INHE	Respirable fraction at agricultural area 2	1.000E+00	1.000E+00	---	RESPFRACOF(2)
INHE	Total mass loading at agricultural area 3 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(3)
INHE	Respirable fraction at agricultural area 3	1.000E+00	1.000E+00	---	RESPFRACOF(3)
INHE	Total mass loading at agricultural area 4 (g/m**3)	1.750E-02	1.000E-04	---	MLTTOF(4)
INHE	Respirable fraction at agricultural area 4	1.000E+00	1.000E-04	---	RESPFRACOF(4)
INHE	Total mass loading at offsite dwelling(g/m**3)	1.750E-02	1.000E-04	---	MLTOTDWELL
INHE	Respirable fraction at offsite dwelling(g/m**3)	1.000E+00	1.000E+00	---	RESPFRACDWELL
INHE	Indoor dust filtration factor, inhalation	4.000E-01	4.000E-01	---	SHF3
INHE	Shielding factor, external gamma	7.000E-01	7.000E-01	---	SHF1
INHE	Shape factor flag, external gamma	-1.000E+00	1.000E+00	noncircular	FS
SEXT	Onsite shape factor array (used if non-circular):				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 1:	1.267E+01	6.000E+00	---	RAD_SHAPE(1)
SEXT	Outer annular radius (m), ring 2:	2.533E+01	1.200E+01	---	RAD_SHAPE(2)
SEXT	Outer annular radius (m), ring 3:	3.800E+01	1.800E+01	---	RAD_SHAPE(3)
SEXT	Outer annular radius (m), ring 4:	5.067E+01	2.400E+01	---	RAD_SHAPE(4)
SEXT	Outer annular radius (m), ring 5:	6.333E+01	3.000E+01	---	RAD_SHAPE(5)
SEXT	Outer annular radius (m), ring 6:	7.600E+01	3.600E+01	---	RAD_SHAPE(6)
SEXT	Outer annular radius (m), ring 7:	8.867E+01	4.200E+01	---	RAD_SHAPE(7)
SEXT	Outer annular radius (m), ring 8:	1.013E+02	4.800E+01	---	RAD_SHAPE(8)
SEXT	Outer annular radius (m), ring 9:	1.140E+02	5.400E+01	---	RAD_SHAPE(9)
SEXT	Outer annular radius (m), ring 10:	1.267E+02	6.000E+01	---	RAD_SHAPE(10)
SEXT	Outer annular radius (m), ring 11:	1.393E+02	6.600E+01	---	RAD_SHAPE(11)
SEXT	Outer annular radius (m), ring 12:	1.520E+02	7.200E+01	---	RAD_SHAPE(12)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 1	1.000E+00	1.000E+00	---	FRACA(1)
SEXT	Ring 2	1.000E+00	1.000E+00	---	FRACA(2)
SEXT	Ring 3	1.000E+00	1.000E+00	---	FRACA(3)
SEXT	Ring 4	1.000E+00	1.000E+00	---	FRACA(4)
SEXT	Ring 5	1.000E+00	1.000E+00	---	FRACA(5)
SEXT	Ring 6	1.000E+00	1.000E+00	---	FRACA(6)
SEXT	Ring 7	1.000E+00	1.000E+00	---	FRACA(7)
SEXT	Ring 8	1.000E+00	1.000E+00	---	FRACA(8)
SEXT	Ring 9	7.800E-01	7.700E-01	---	FRACA(9)

SEXT	Ring 10	3.700E-01	3.700E-01	---	FRACA(10)
SEXT	Ring 11	1.700E-01	1.700E-01	---	FRACA(11)
SEXT	Ring 12	3.800E-02	3.100E-02	---	FRACA(12)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite dwelling:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 13:	4.483E+01	1.325E+01	---	RAD_SHAPE(13)
SEXT	Outer annular radius (m), ring 14:	8.967E+01	2.650E+01	---	RAD_SHAPE(14)
SEXT	Outer annular radius (m), ring 15:	1.345E+02	3.975E+01	---	RAD_SHAPE(15)
SEXT	Outer annular radius (m), ring 16:	1.793E+02	5.300E+01	---	RAD_SHAPE(16)
SEXT	Outer annular radius (m), ring 17:	2.242E+02	6.625E+01	---	RAD_SHAPE(17)
SEXT	Outer annular radius (m), ring 18:	2.690E+02	7.950E+01	---	RAD_SHAPE(18)
SEXT	Outer annular radius (m), ring 19:	3.138E+02	9.275E+01	---	RAD_SHAPE(19)
SEXT	Outer annular radius (m), ring 20:	3.587E+02	1.060E+02	---	RAD_SHAPE(20)
SEXT	Outer annular radius (m), ring 21:	4.035E+02	1.192E+02	---	RAD_SHAPE(21)
SEXT	Outer annular radius (m), ring 22:	4.483E+02	1.325E+02	---	RAD_SHAPE(22)
SEXT	Outer annular radius (m), ring 23:	4.932E+02	1.458E+02	---	RAD_SHAPE(23)
SEXT	Outer annular radius (m), ring 24:	5.380E+02	1.590E+02	---	RAD_SHAPE(24)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 13	0.000E+00	0.000E+00	---	FRACA(13)
SEXT	Ring 14	0.000E+00	0.000E+00	---	FRACA(14)
SEXT	Ring 15	0.000E+00	0.000E+00	---	FRACA(15)
SEXT	Ring 16	0.000E+00	2.400E-02	---	FRACA(16)
SEXT	Ring 17	0.000E+00	1.900E-01	---	FRACA(17)
SEXT	Ring 18	0.000E+00	2.400E-01	---	FRACA(18)
SEXT	Ring 19	4.500E-02	2.000E-01	---	FRACA(19)
SEXT	Ring 20	8.800E-02	1.700E-01	---	FRACA(20)
SEXT	Ring 21	9.700E-02	1.500E-01	---	FRACA(21)
SEXT	Ring 22	8.500E-02	1.300E-01	---	FRACA(22)
SEXT	Ring 23	7.000E-02	1.200E-01	---	FRACA(23)
SEXT	Ring 24	1.800E-02	5.200E-02	---	FRACA(24)
SEXT	Shape factor array from offsite area 1:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 25:	2.551E+02	2.551E+02	---	RAD_SHAPE(25)
SEXT	Outer annular radius (m), ring 26:	2.621E+02	2.621E+02	---	RAD_SHAPE(26)
SEXT	Outer annular radius (m), ring 27:	2.964E+02	2.964E+02	---	RAD_SHAPE(27)
SEXT	Outer annular radius (m), ring 28:	3.206E+02	3.206E+02	---	RAD_SHAPE(28)
SEXT	Outer annular radius (m), ring 29:	3.449E+02	3.449E+02	---	RAD_SHAPE(29)
SEXT	Outer annular radius (m), ring 30:	3.691E+02	3.691E+02	---	RAD_SHAPE(30)
SEXT	Outer annular radius (m), ring 31:	3.934E+02	3.934E+02	---	RAD_SHAPE(31)
SEXT	Outer annular radius (m), ring 32:	4.176E+02	4.176E+02	---	RAD_SHAPE(32)
SEXT	Outer annular radius (m), ring 33:	4.419E+02	4.419E+02	---	RAD_SHAPE(33)

SEXT	Outer annular radius (m), ring 34:	4.661E+02	4.661E+02	---	RAD_SHAPE(34)
SEXT	Outer annular radius (m), ring 35:	4.700E+02	4.700E+02	---	RAD_SHAPE(35)
SEXT	Outer annular radius (m), ring 36:	4.899E+02	4.899E+02	---	RAD_SHAPE(36)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 25	0.000E+00	0.000E+00	---	FRACA(25)
SEXT	Ring 26	3.732E-02	3.732E-02	---	FRACA(26)
SEXT	Ring 27	9.692E-02	9.692E-02	---	FRACA(27)
SEXT	Ring 28	1.126E-01	1.126E-01	---	FRACA(28)
SEXT	Ring 29	1.038E-01	1.038E-01	---	FRACA(29)
SEXT	Ring 30	9.639E-02	9.639E-02	---	FRACA(30)
SEXT	Ring 31	8.997E-02	8.997E-02	---	FRACA(31)
SEXT	Ring 32	8.437E-02	8.437E-02	---	FRACA(32)
SEXT	Ring 33	7.944E-02	7.944E-02	---	FRACA(33)
SEXT	Ring 34	7.506E-02	7.506E-02	---	FRACA(34)
SEXT	Ring 35	5.225E-02	5.225E-02	---	FRACA(35)
SEXT	Ring 36	1.548E-02	1.548E-02	---	FRACA(36)
SEXT	Shape factor array from offsite area 2:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 37:	2.940E+02	2.940E+02	---	RAD_SHAPE(37)
SEXT	Outer annular radius (m), ring 38:	3.001E+02	3.001E+02	---	RAD_SHAPE(38)
SEXT	Outer annular radius (m), ring 39:	3.305E+02	3.305E+02	---	RAD_SHAPE(39)
SEXT	Outer annular radius (m), ring 40:	3.554E+02	3.554E+02	---	RAD_SHAPE(40)
SEXT	Outer annular radius (m), ring 41:	3.803E+02	3.803E+02	---	RAD_SHAPE(41)
SEXT	Outer annular radius (m), ring 42:	4.053E+02	4.053E+02	---	RAD_SHAPE(42)
SEXT	Outer annular radius (m), ring 43:	4.302E+02	4.302E+02	---	RAD_SHAPE(43)
SEXT	Outer annular radius (m), ring 44:	4.551E+02	4.551E+02	---	RAD_SHAPE(44)
SEXT	Outer annular radius (m), ring 45:	4.801E+02	4.801E+02	---	RAD_SHAPE(45)
SEXT	Outer annular radius (m), ring 46:	5.050E+02	5.050E+02	---	RAD_SHAPE(46)
SEXT	Outer annular radius (m), ring 47:	5.086E+02	5.086E+02	---	RAD_SHAPE(47)
SEXT	Outer annular radius (m), ring 48:	5.271E+02	5.271E+02	---	RAD_SHAPE(48)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 37	0.000E+00	0.000E+00	---	FRACA(37)
SEXT	Ring 38	3.242E-02	3.242E-02	---	FRACA(38)
SEXT	Ring 39	8.535E-02	8.535E-02	---	FRACA(39)
SEXT	Ring 40	1.006E-01	1.006E-01	---	FRACA(40)
SEXT	Ring 41	9.340E-02	9.340E-02	---	FRACA(41)
SEXT	Ring 42	8.721E-02	8.721E-02	---	FRACA(42)
SEXT	Ring 43	8.180E-02	8.180E-02	---	FRACA(43)
SEXT	Ring 44	7.704E-02	7.704E-02	---	FRACA(44)
SEXT	Ring 45	7.281E-02	7.281E-02	---	FRACA(45)
SEXT	Ring 46	6.903E-02	6.903E-02	---	FRACA(46)

SEXT	Ring 47	4.812E-02	4.812E-02	---	FRACA(47)
SEXT	Ring 48	1.429E-02	1.429E-02	---	FRACA(48)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Shape factor array from offsite area 3:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 49:	3.696E+02	3.696E+02	---	RAD_SHAPE(49)
SEXT	Outer annular radius (m), ring 50:	3.766E+02	3.766E+02	---	RAD_SHAPE(50)
SEXT	Outer annular radius (m), ring 51:	3.948E+02	3.948E+02	---	RAD_SHAPE(51)
SEXT	Outer annular radius (m), ring 52:	4.213E+02	4.213E+02	---	RAD_SHAPE(52)
SEXT	Outer annular radius (m), ring 53:	4.479E+02	4.479E+02	---	RAD_SHAPE(53)
SEXT	Outer annular radius (m), ring 54:	4.744E+02	4.744E+02	---	RAD_SHAPE(54)
SEXT	Outer annular radius (m), ring 55:	5.010E+02	5.010E+02	---	RAD_SHAPE(55)
SEXT	Outer annular radius (m), ring 56:	5.275E+02	5.275E+02	---	RAD_SHAPE(56)
SEXT	Outer annular radius (m), ring 57:	5.541E+02	5.541E+02	---	RAD_SHAPE(57)
SEXT	Outer annular radius (m), ring 58:	5.806E+02	5.806E+02	---	RAD_SHAPE(58)
SEXT	Outer annular radius (m), ring 59:	5.851E+02	5.851E+02	---	RAD_SHAPE(59)
SEXT	Outer annular radius (m), ring 60:	5.970E+02	5.970E+02	---	RAD_SHAPE(60)
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 49	0.000E+00	0.000E+00	---	FRACA(49)
SEXT	Ring 50	3.100E-02	3.100E-02	---	FRACA(50)
SEXT	Ring 51	7.423E-02	7.423E-02	---	FRACA(51)
SEXT	Ring 52	8.355E-02	8.355E-02	---	FRACA(52)
SEXT	Ring 53	7.830E-02	7.830E-02	---	FRACA(53)
SEXT	Ring 54	7.368E-02	7.368E-02	---	FRACA(54)
SEXT	Ring 55	6.958E-02	6.958E-02	---	FRACA(55)
SEXT	Ring 56	6.592E-02	6.592E-02	---	FRACA(56)
SEXT	Ring 57	6.262E-02	6.262E-02	---	FRACA(57)
SEXT	Ring 58	5.965E-02	5.965E-02	---	FRACA(58)
SEXT	Ring 59	3.827E-02	3.827E-02	---	FRACA(59)
SEXT	Ring 60	9.120E-03	9.120E-03	---	FRACA(60)
SEXT	Shape factor array from offsite area 4:				
SEXT	Radii of shape factor array (used if non-circular):				
SEXT	Outer annular radius (m), ring 61:	3.746E+02	3.746E+02	---	RAD_SHAPE(61)
SEXT	Outer annular radius (m), ring 62:	4.027E+02	4.027E+02	---	RAD_SHAPE(62)
SEXT	Outer annular radius (m), ring 63:	4.308E+02	4.308E+02	---	RAD_SHAPE(63)
SEXT	Outer annular radius (m), ring 64:	4.590E+02	4.590E+02	---	RAD_SHAPE(64)
SEXT	Outer annular radius (m), ring 65:	4.839E+02	4.839E+02	---	RAD_SHAPE(65)
SEXT	Outer annular radius (m), ring 66:	5.089E+02	5.089E+02	---	RAD_SHAPE(66)
SEXT	Outer annular radius (m), ring 67:	5.339E+02	5.339E+02	---	RAD_SHAPE(67)
SEXT	Outer annular radius (m), ring 68:	5.588E+02	5.588E+02	---	RAD_SHAPE(68)
SEXT	Outer annular radius (m), ring 69:	5.838E+02	5.838E+02	---	RAD_SHAPE(69)
SEXT	Outer annular radius (m), ring 70:	6.029E+02	6.029E+02	---	RAD_SHAPE(70)

SEXT	Outer annular radius (m), ring 71:	6.221E+02	6.221E+02	---	RAD_SHAPE(71)
SEXT	Outer annular radius (m), ring 72:	6.412E+02	6.412E+02	---	RAD_SHAPE(72)

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)					
0 Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
SEXT	Fractions of annular areas within AREA:				
SEXT	Ring 61	0.000E+00	0.000E+00	---	FRACA (61)
SEXT	Ring 62	2.112E-02	2.112E-02	---	FRACA (62)
SEXT	Ring 63	5.239E-02	5.239E-02	---	FRACA (63)
SEXT	Ring 64	7.176E-02	7.176E-02	---	FRACA (64)
SEXT	Ring 65	7.725E-02	7.725E-02	---	FRACA (65)
SEXT	Ring 66	7.271E-02	7.271E-02	---	FRACA (66)
SEXT	Ring 67	6.870E-02	6.870E-02	---	FRACA (67)
SEXT	Ring 68	6.514E-02	6.514E-02	---	FRACA (68)
SEXT	Ring 69	6.196E-02	6.196E-02	---	FRACA (69)
SEXT	Ring 70	4.553E-02	4.553E-02	---	FRACA (70)
SEXT	Ring 71	2.220E-02	2.220E-02	---	FRACA (71)
SEXT	Ring 72	6.703E-03	6.703E-03	---	FRACA (72)
OCCU	Fraction of time spent indoors on contaminated site	0.000E+00	0.000E+00	---	FIND
OCCU	Fraction of time spent outdoors on contaminated site	0.000E+00	0.000E+00	---	FOTD
OCCU	Fraction of time spent indoors in Offsite Dwelling	6.550E-01	5.000E-01	---	FINDDWELL
OCCU	Fraction of time spent outdoors in Offsite Dwelling	7.990E-02	1.000E-01	---	FOTDDWELL
OCCU	Fraction of time spent outdoors in agri. area 1	6.000E-02	1.000E-01	---	OCCUPANCY (1)
OCCU	Fraction of time spent outdoors in agri. area 2	6.000E-02	1.000E-01	---	OCCUPANCY (2)
OCCU	Fraction of time spent outdoors in agri. area 3	6.000E-02	1.000E-01	---	OCCUPANCY (3)
OCCU	Fraction of time spent outdoors in agri. area 4	6.000E-02	1.000E-01	---	OCCUPANCY (4)
RADN	Diffusion coefficient for radon gas (m/sec):				
RADN	in cover material	not used	2.000E-06	---	DIFCV
RADN	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
RADN	in fruit, grain and non-leafy vegetable field	not used	2.000E-06	---	DIFOS (1)
RADN	in leafy vegetable field	not used	2.000E-06	---	DIFOS (2)
RADN	in pasture	not used	2.000E-06	---	DIFOS (3)
RADN	in livestock grain field	not used	2.000E-06	---	DIFOS (4)
RADN	in offsite dwelling site	not used	2.000E-06	---	DIFOS (5)
RADN	in foundation material	not used	3.000E-07	---	DIFFL
RADN	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
RADN	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
RADN	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
RADN	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
RADN	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
RADN	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
RADN	Height of the building (room) (m)	not used	2.500E+00	---	HRM

RADN	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
RADN	Building interior area factor	not used	0.000E+00	---	FAI
RADN	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
RADN	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	Vertical dimension of mixing for vegetation (m)	not used	1.000E+00	---	HMIXV
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	C14EVSN

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	RESRAD computed	Parameter Name
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	C12EVSN
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C12	C-12 concentration in the atmosphere (g/m**3)	not used	1.800E-01	---	C12AIR
C12	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C12	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C12	C-12 concentration in meat 1 (g/g)	not used	2.400E-01	---	C12MEAT_MILK (1)
C12	C-12 concentration in milk (g/g)	not used	7.000E-02	---	C12MEAT_MILK (2)
C12	C-12 concentration in vegetable 1 (g/g)	not used	4.000E-01	---	C12PLANT (1)
C12	C-12 concentration in vegetable 2 (g/g)	not used	9.000E-02	---	C12PLANT (2)
C12	C-12 concentration in livestock feed 1 (g/g)	not used	9.000E-02	---	C12PLANT (3)
C12	C-12 concentration in livestock feed 2 (g/g)	not used	4.000E-01	---	C12PLANT (4)
H3	Humidity in air (g/cm**3)	not used	8.000E+00	---	HUMID
H3	Mass fraction of water in meat 1 (g/g)	not used	6.000E-01	---	H2OMEAT_MILK (1)
H3	Mass fraction of water in milk (g/g)	not used	8.800E-01	---	H2OMEAT_MILK (2)
H3	Mass fraction of water in vegetable 1 (g/g)	not used	8.000E-01	---	H2OPLANT (1)
H3	Mass fraction of water in vegetable 2 (g/g)	not used	8.000E-01	---	H2OPLANT (2)
H3	Mass fraction of water in livestock feed 1 (g/g)	not used	8.000E-01	---	H2OPLANT (3)
H3	Mass fraction of water in livestock feed 2 (g/g)	not used	8.000E-01	---	H2OPLANT (4)

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active

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1RESRAD-OFFSITE, Version 4.0          T½ Limit = 30 days          03/23/2023  16:57  Page  40
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File  : SHIPROCK ALTS 2 3 OFFSITE RESF.ROF
```

Area:	44521.00 square meters	U-234	1.485E+01
Thickness:	2.00 meters	U-235	9.550E-01
Cover Depth:	0.00 meters	U-238	1.308E+01

```

0
                                Total Dose TDOSE(t), mrem/yr
                                Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

```

```

t (years): 0.000E+00 1.000E+00
TDOSE(t): 4.236E-02 4.246E-02
M(t): 1.694E-03 1.698E-03
Maximum TDOSE(t): 4.251E-02 mrem/yr at t = 1.99 years
RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 41
Parent Dose Report
Title : Shiprock GW Evap. Pond_Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
File : SHIPROCK ALTS 2 3 OFFSITE RESF.ROF

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[illegible][illegible]

U-234	7.90E-08	0	2.23E-02	53	0.00E+00	0	1.93E-04	0	2.89E-06	0	1.44E-05	0	7.43E-08	0	2.25E-02	53
U-235	2.34E-04	1	1.29E-03	3	0.00E+00	0	1.18E-05	0	1.77E-07	0	8.77E-07	0	4.54E-09	0	1.54E-03	4
U-238	1.27E-03	3	1.68E-02	40	0.00E+00	0	1.64E-04	0	2.47E-06	0	1.23E-05	0	6.34E-08	0	1.83E-02	43
Total	1.51E-03	4	4.05E-02	95	0.00E+00	0	3.69E-04	1	5.54E-06	0	2.75E-05	0	1.42E-07	0	4.24E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
in mrem/yr and as a Percentage of Total Dose at t = 1 years

0
0 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways*	
	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%	Dose	%
U-234	8.54E-08	0	2.24E-02	53	0.00E+00	0	1.93E-04	0	2.93E-06	0	1.45E-05	0	2.21E-07	0	2.26E-02	53
U-235	2.35E-04	1	1.30E-03	3	0.00E+00	0	1.18E-05	0	1.80E-07	0	8.83E-07	0	1.35E-08	0	1.54E-03	4
U-238	1.28E-03	3	1.69E-02	40	0.00E+00	0	1.65E-04	0	2.50E-06	0	1.23E-05	0	1.89E-07	0	1.83E-02	43
Total	1.51E-03	4	4.05E-02	95	0.00E+00	0	3.70E-04	1	5.61E-06	0	2.77E-05	0	4.24E-07	0	4.25E-02	100

0*Sum of dose from all releases and from primary contamination.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent	Product	Thread	DSR(j,t) (mrem/yr)/(pCi/g)
(i)	(j)	Fraction	0.000E+00 1.000E+00
U-234	U-234	1.000E+00	1.518E-03 1.522E-03
U-234	Th-230	1.000E+00	7.500E-08 2.255E-07
U-234	Ra-226+D	1.000E+00	5.646E-12 3.960E-11

U-234	Pb-210+D	1.000E+00	5.779E-15	8.656E-14
U-234	Po-210	1.000E+00	1.530E-15	3.768E-14
U-234	ΣDSR(j)		1.518E-03	1.522E-03
0U-234	U-234	1.339E-06	2.033E-09	2.037E-09
U-234	Th-230	1.339E-06	1.004E-13	3.019E-13
U-234	Ra-226+D	1.339E-06	7.560E-18	5.303E-17
U-234	Pb-210+D1	1.339E-06	7.815E-21	1.170E-19
U-234	ΣDSR(j)		2.033E-09	2.038E-09
0U-235+D	U-235+D	1.000E+00	1.612E-03	1.616E-03
U-235+D	Pa-231	1.000E+00	3.913E-07	1.177E-06
U-235+D	Ac-227+D	1.000E+00	3.222E-09	2.240E-08
U-235	ΣDSR(j)		1.613E-03	1.618E-03
0U-238	U-238	5.450E-07	7.074E-10	7.090E-10
0U-238+D	U-238+D	1.000E+00	1.397E-03	1.401E-03
U-238+D	U-234	1.000E+00	2.144E-09	6.445E-09
U-238+D	Th-230	1.000E+00	7.060E-14	4.942E-13
U-238+D	Ra-226+D	1.000E+00	3.773E-18	4.015E-19
U-238+D	Pb-210+D	1.000E+00	1.276E-19	1.373E-19
U-238+D	Po-210	1.000E+00	4.849E-20	1.293E-20
U-238	ΣDSR(j)		1.397E-03	1.401E-03
0U-238+D	U-238+D	1.339E-06	1.871E-09	1.875E-09
U-238+D	U-234	1.339E-06	2.870E-15	8.630E-15
U-238+D	Th-230	1.339E-06	9.453E-20	6.624E-19
U-238+D	Ra-226+D	1.339E-06	6.758E-24	2.125E-23
U-238+D	Pb-210+D1	1.339E-06	1.246E-25	3.717E-26
U-238	ΣDSR(j)		1.871E-09	1.875E-09

The DSR includes contributions from associated (half-life ≤ 30 days) daughters.

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide

(i)	t= 0.000E+00	1.000E+00
U-234	1.647E+04	1.643E+04
U-235	1.550E+04	1.546E+04
U-238	1.789E+04	1.785E+04

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)

and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 1.99 years

0Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)

U-234	1.485E+01	1.99	1.524E-03	1.641E+04	1.524E-03	1.641E+04
U-235	9.550E-01	2	1.620E-03	1.543E+04	1.620E-03	1.543E+04
U-238	1.308E+01	1.99	1.402E-03	1.783E+04	1.402E-03	1.783E+04

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 45
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr	
(j)	(i)		t= 0.000E+00	1.000E+00

U-234	U-234	1.000E+00	2.254E-02	2.259E-02
U-234	U-234	1.339E-06	3.018E-08	3.025E-08
U-234	U-238	1.000E+00	2.804E-08	8.430E-08
U-234	ΣDOSE(j):		2.254E-02	2.259E-02
0Th-230	U-234	1.000E+00	1.114E-06	3.348E-06
Th-230	U-238	1.000E+00	9.234E-13	6.464E-12
Th-230	ΣDOSE(j):		1.114E-06	3.348E-06
0Ra-226	U-234	1.000E+00	8.384E-11	5.881E-10
Ra-226	U-238	1.000E+00	4.935E-17	5.252E-18
Ra-226	ΣDOSE(j):		8.384E-11	5.881E-10
0Pb-210	U-234	1.000E+00	8.582E-14	1.285E-12
Pb-210	U-238	1.000E+00	1.669E-18	1.796E-18
Pb-210	ΣDOSE(j):		8.582E-14	1.285E-12
0Po-210	U-234	1.000E+00	2.273E-14	5.595E-13
Po-210	U-238	1.000E+00	6.342E-19	1.692E-19
Po-210	ΣDOSE(j):		2.273E-14	5.595E-13
0Th-230	U-234	1.339E-06	1.491E-12	4.483E-12
Th-230	U-238	1.339E-06	1.236E-18	8.665E-18
Th-230	ΣDOSE(j):		1.491E-12	4.483E-12
0Ra-226	U-234	1.339E-06	1.123E-16	7.875E-16
Ra-226	U-238	1.339E-06	8.840E-23	2.780E-22
Ra-226	ΣDOSE(j):		1.123E-16	7.875E-16
0Pb-210	U-234	1.339E-06	1.161E-19	1.737E-18
Pb-210	U-238	1.339E-06	1.629E-24	4.862E-25
Pb-210	ΣDOSE(j):		1.161E-19	1.737E-18
0U-235	U-235	1.000E+00	1.540E-03	1.544E-03
0Pa-231	U-235	1.000E+00	3.737E-07	1.124E-06
0Ac-227	U-235	1.000E+00	3.077E-09	2.139E-08
0U-238	U-238	5.450E-07	9.252E-09	9.274E-09
U-238	U-238	1.000E+00	1.828E-02	1.832E-02
U-238	ΣDOSE(j):		1.828E-02	1.832E-02
0U-238	U-238	1.339E-06	2.447E-08	2.453E-08

1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 46
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	3.755E-14	1.129E-13

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-OFFSITE, Version 4.0

T½ Limit = 30 days

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Parent Dose Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Individual Nuclide Soil Concentration

Parent Nuclide and Thread Fraction Indicated

0Nuclide (j)	Parent (i)	THF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00
U-234	U-234	1.000E+00	1.485E+01	1.484E+01
U-234	U-234	1.339E-06	1.988E-05	1.988E-05
U-234	U-238	1.000E+00	0.000E+00	3.692E-05
U-234	ΣS(j):		1.485E+01	1.484E+01
0Th-230	U-234	1.000E+00	0.000E+00	1.365E-04
Th-230	U-238	1.000E+00	0.000E+00	1.698E-10
Th-230	ΣS(j):		0.000E+00	1.365E-04
0Ra-226	U-234	1.000E+00	0.000E+00	2.957E-08
Ra-226	U-238	1.000E+00	0.000E+00	2.219E-14
Ra-226	ΣS(j):		0.000E+00	2.957E-08
0Pb-210	U-234	1.000E+00	0.000E+00	3.053E-10
Pb-210	U-238	1.000E+00	0.000E+00	6.647E-14
Pb-210	ΣS(j):		0.000E+00	3.054E-10
0Po-210	U-234	1.000E+00	0.000E+00	1.010E-10
Po-210	U-238	1.000E+00	0.000E+00	8.724E-15
Po-210	ΣS(j):		0.000E+00	1.010E-10
0Th-230	U-234	1.339E-06	0.000E+00	1.828E-10
Th-230	U-238	1.339E-06	0.000E+00	2.272E-16
Th-230	ΣS(j):		0.000E+00	1.828E-10
0Ra-226	U-234	1.339E-06	0.000E+00	3.959E-14
Ra-226	U-238	1.339E-06	0.000E+00	1.639E-19
Ra-226	ΣS(j):		0.000E+00	3.959E-14
0Pb-210	U-234	1.339E-06	0.000E+00	4.089E-16
Pb-210	U-238	1.339E-06	0.000E+00	8.666E-21
Pb-210	ΣS(j):		0.000E+00	4.089E-16
0U-235	U-235	1.000E+00	9.550E-01	9.546E-01
0Pa-231	U-235	1.000E+00	0.000E+00	2.020E-05
0Ac-227	U-235	1.000E+00	0.000E+00	3.181E-07
0U-238	U-238	5.450E-07	7.129E-06	7.126E-06
U-238	U-238	1.000E+00	1.308E+01	1.308E+01

U-238 ES(j): 1.308E+01 1.308E+01
 0U-238 U-238 1.339E-06 1.751E-05 1.751E-05
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 48
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Individual Nuclide Soil Concentration
 Parent Nuclide and Thread Fraction Indicated

0Nuclide	Parent	THF(i)	S(j,t), pCi/g	
(j)	(i)		t= 0.000E+00	1.000E+00
U-234	U-238	1.339E-06	0.000E+00	4.943E-11

THF(i) is the thread fraction of the parent nuclide.
 1RESRAD-OFFSITE, Version 4.0 T½ Limit = 30 days 03/23/2023 16:57 Page 49
 Parent Dose Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Run Time Information

ResOCalc.EXE execution began at 16:57 on 03/23/2023

ResOCalc.EXE execution ended at 16:58 on 03/23/2023

ResOCalc.EXE execution time 23.922 seconds

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Part III: Dose from Radionuclide at Point of Action

Total Dose Components Summed to Progeny

Time = 0.000E+00 years 2

Time = 1.000E+00 years 3

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 0 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.3E-11	3.0E-09	0.0E+00	1.2E-11	4.1E-13	3.0E-14	7.0E-15	3.1E-09
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.2E-10	3.7E-07	0.0E+00	1.3E-09	2.5E-10	1.3E-12	6.5E-13	3.7E-07
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-16	7.0E-14	0.0E+00	1.4E-14	5.2E-16	5.4E-16	8.9E-18	8.6E-14
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.4E-19	1.5E-14	0.0E+00	6.8E-15	1.1E-15	2.8E-16	5.2E-18	2.3E-14
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.8E-11	1.5E-11	0.0E+00	7.6E-13	2.8E-14	9.1E-14	4.2E-16	8.4E-11
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E-11	1.1E-06	0.0E+00	3.8E-09	2.1E-11	3.9E-12	2.0E-12	1.1E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.9E-08	2.2E-02	0.0E+00	1.9E-04	2.9E-06	1.4E-05	7.4E-08	2.3E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	1.3E-03	0.0E+00	1.2E-05	1.8E-07	8.8E-07	4.5E-09	1.5E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	1.7E-02	0.0E+00	1.6E-04	2.5E-06	1.2E-05	6.3E-08	1.8E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	4.0E-02	0.0E+00	3.7E-04	5.5E-06	2.7E-05	1.4E-07	4.2E-02

0*Sum of dose from all releases and from primary contamination.

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 in mrem/yr at t = 1 years

0	From releases to ground water and to surface water								Directly from primary contamination and from atmospheric release							
0 Nuc.	Ground	Fish	Radon	Plant	Meat	Milk	Soil	Water	Ground	Dust	Radon	Plant	Meat	Milk	Soil	ALL*
Ac-227	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.5E-10	2.1E-08	0.0E+00	8.4E-11	1.4E-12	2.1E-13	1.0E-13	2.1E-08
Pa-231	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.9E-09	1.1E-06	0.0E+00	3.9E-09	8.3E-10	2.9E-12	4.5E-12	1.1E-06
Pb-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-15	1.1E-12	0.0E+00	2.2E-13	7.8E-15	8.0E-15	2.7E-16	1.3E-12
Po-210	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.1E-17	3.6E-13	0.0E+00	1.7E-13	3.1E-14	7.0E-15	2.1E-16	5.6E-13
Ra-226	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	4.8E-10	1.1E-10	0.0E+00	5.7E-12	2.3E-13	6.5E-13	6.3E-15	5.9E-10
Th-230	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.1E-11	3.3E-06	0.0E+00	1.1E-08	5.6E-11	8.7E-12	1.4E-11	3.3E-06
U-234	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.5E-08	2.2E-02	0.0E+00	1.9E-04	2.9E-06	1.4E-05	2.2E-07	2.3E-02
U-235	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	2.3E-04	1.3E-03	0.0E+00	1.2E-05	1.8E-07	8.8E-07	1.4E-08	1.5E-03
U-238	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.3E-03	1.7E-02	0.0E+00	1.7E-04	2.5E-06	1.2E-05	1.9E-07	1.8E-02
Total	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.5E-03	4.1E-02	0.0E+00	3.7E-04	5.6E-06	2.8E-05	4.2E-07	4.2E-02

0*Sum of dose from all releases and from primary contamination.

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Part II: Health Risk Factors

Cancer Risk Slope Factors	2
Excess Cancer Risks at	
Time = 0.000E+00	4
Time = 1.000E+00	6

Cancer Risk Slope Factors Summary Table
 Current library: DCFPAK3.02 Morbidity
 Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ground external radiation slope factors, 1/yr per (pCi/g):			
DCSF	Ac-227+D	1.63E-06	1.63E-06	SLPF(1,1)
DCSF	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
DCSF	Pb-210+D	4.25E-09	4.25E-09	SLPF(3,1)
DCSF	Pb-210+D1	1.72E-08	1.72E-08	SLPF(4,1)
DCSF	Po-210	4.51E-11	4.51E-11	SLPF(5,1)
DCSF	Ra-226+D	8.37E-06	8.37E-06	SLPF(6,1)
DCSF	Th-230	8.45E-10	8.45E-10	SLPF(8,1)
DCSF	U-234	2.53E-10	2.53E-10	SLPF(10,1)
DCSF	U-235+D	5.76E-07	5.76E-07	SLPF(12,1)
DCSF	U-238	1.24E-10	1.24E-10	SLPF(13,1)
DCSF	U-238+D	1.19E-07	1.19E-07	SLPF(14,1)
DCSF	Inhalation, slope factors, 1/(pCi):			
DCSF	Ac-227+D	2.13E-07	2.13E-07	SLPF(1,2)
DCSF	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
DCSF	Pb-210+D	1.63E-08	1.63E-08	SLPF(3,2)
DCSF	Pb-210+D1	1.63E-08	1.63E-08	SLPF(4,2)
DCSF	Po-210	1.45E-08	1.45E-08	SLPF(5,2)
DCSF	Ra-226+D	2.82E-08	2.82E-08	SLPF(6,2)
DCSF	Th-230	3.41E-08	3.41E-08	SLPF(8,2)
DCSF	U-234	2.78E-08	2.78E-08	SLPF(10,2)
DCSF	U-235+D	2.50E-08	2.50E-08	SLPF(12,2)
DCSF	U-238	2.36E-08	2.36E-08	SLPF(13,2)
DCSF	U-238+D	2.37E-08	2.37E-08	SLPF(14,2)

DCSF	Food ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,3)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,3)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,3)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,3)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,3)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,3)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,3)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,3)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,3)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,3)
DCSF	Water ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	4.87E-10	4.87E-10	SLPF(1,4)
DCSF	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
DCSF	Pb-210+D	8.93E-10	8.93E-10	SLPF(3,4)
DCSF	Pb-210+D1	8.93E-10	8.93E-10	SLPF(4,4)
DCSF	Po-210	1.78E-09	1.78E-09	SLPF(5,4)

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Cancer Risk Slope Factors Summary Table (continued)

Current library: DCFPAK3.02 Morbidity

Default library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
DCSF	Ra-226+D	3.85E-10	3.85E-10	SLPF(6,4)
DCSF	Th-230	9.14E-11	9.14E-11	SLPF(8,4)
DCSF	U-234	7.07E-11	7.07E-11	SLPF(10,4)
DCSF	U-235+D	7.17E-11	7.17E-11	SLPF(12,4)
DCSF	U-238	6.40E-11	6.40E-11	SLPF(13,4)
DCSF	U-238+D	8.71E-11	8.71E-11	SLPF(14,4)
DCSF	Soil ingestion, slope factors, 1/(pCi):			
DCSF	Ac-227+D	6.54E-10	6.54E-10	SLPF(1,5)
DCSF	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
DCSF	Pb-210+D	1.19E-09	1.19E-09	SLPF(3,5)
DCSF	Pb-210+D1	1.19E-09	1.19E-09	SLPF(4,5)
DCSF	Po-210	2.25E-09	2.25E-09	SLPF(5,5)
DCSF	Ra-226+D	5.15E-10	5.15E-10	SLPF(6,5)
DCSF	Th-230	1.19E-10	1.19E-10	SLPF(8,5)
DCSF	U-234	9.55E-11	9.55E-11	SLPF(10,5)
DCSF	U-235+D	9.76E-11	9.76E-11	SLPF(12,5)
DCSF	U-238	8.66E-11	8.66E-11	SLPF(13,5)
DCSF	U-238+D	1.21E-10	1.21E-10	SLPF(14,5)

Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
Sf-Rn	Radon K factors, (mrem/WLM):			
Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

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Risk Report

Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3

File : SHIPROCK_ALTS_2_3_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	From releases to ground water and to surface water													
	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 0 years

Radio- Nuclide	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	7.35E-17	0	9.81E-16	0	4.93E-18	0	1.65E-19	0	1.22E-20	0	2.83E-21	0	1.06E-15	0
Pa-231	4.94E-16	0	3.33E-14	0	1.63E-16	0	3.21E-17	0	1.66E-19	0	8.30E-20	0	3.40E-14	0
Pb-210	1.04E-22	0	5.40E-20	0	6.55E-21	0	2.39E-22	0	2.48E-22	0	4.11E-24	0	6.12E-20	0
Po-210	6.71E-25	0	1.33E-20	0	3.40E-21	0	5.61E-22	0	1.43E-22	0	2.63E-24	0	1.75E-20	0
Ra-226	5.45E-17	0	1.20E-17	0	3.77E-19	0	1.40E-20	0	4.50E-20	0	2.09E-22	0	6.70E-17	0
Th-230	7.75E-18	0	1.01E-13	0	5.74E-16	0	3.16E-18	0	5.90E-19	0	2.97E-19	0	1.01E-13	0
U-234	5.79E-14	0	1.79E-08	53	1.00E-10	0	1.51E-12	0	7.48E-12	0	3.87E-14	0	1.80E-08	53
U-235	1.84E-10	1	1.03E-09	3	6.59E-12	0	9.91E-14	0	4.92E-13	0	2.54E-15	0	1.22E-09	4
U-238	9.27E-10	3	1.34E-08	40	1.12E-10	0	1.68E-12	0	8.32E-12	0	4.31E-14	0	1.44E-08	43

Total	1.11E-09	3	3.23E-08	96	2.18E-10	1	3.28E-12	0	1.63E-11	0	8.43E-14	0	3.36E-08	100
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* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
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 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t = 0 years

Radionuclides									
Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

From releases to ground water and to surface water

Radio-Nuclide	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 0 years

Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	5.79E-14	0	1.79E-08	53	0.00E+00	0	1.00E-10	0	1.51E-12	0	7.48E-12	0	3.87E-14	0	1.80E-08	53
U-235	1.84E-10	1	1.03E-09	3	0.00E+00	0	6.59E-12	0	9.92E-14	0	4.92E-13	0	2.54E-15	0	1.22E-09	4
U-238	9.27E-10	3	1.34E-08	40	0.00E+00	0	1.12E-10	0	1.68E-12	0	8.32E-12	0	4.31E-14	0	1.44E-08	43
Total	1.11E-09	3	3.23E-08	96	0.00E+00	0	2.18E-10	1	3.28E-12	0	1.63E-11	0	8.43E-14	0	3.36E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.
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 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 From releases to ground water and to surface water

Radio- Nuclide	Ground		Fish		Plant		Meat		Milk		Soil		Water	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pa-231	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Pb-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Po-210	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Ra-226	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Th-230	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t = 1 years
 Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil		All Pathways*	
	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
Ac-227	5.11E-16	0	6.82E-15	0	3.44E-17	0	5.63E-19	0	8.53E-20	0	4.16E-20	0	7.36E-15	0
Pa-231	1.48E-15	0	1.00E-13	0	4.97E-16	0	1.06E-16	0	3.71E-19	0	5.77E-19	0	1.02E-13	0
Pb-210	1.55E-21	0	8.07E-19	0	9.94E-20	0	3.61E-21	0	3.68E-21	0	1.24E-22	0	9.15E-19	0
Po-210	1.64E-23	0	3.26E-19	0	8.32E-20	0	1.56E-20	0	3.52E-21	0	1.06E-22	0	4.29E-19	0
Ra-226	3.82E-16	0	8.44E-17	0	2.81E-18	0	1.12E-19	0	3.24E-19	0	3.12E-21	0	4.70E-16	0
Th-230	2.34E-17	0	3.02E-13	0	1.73E-15	0	8.40E-18	0	1.31E-18	0	2.07E-18	0	3.04E-13	0
U-234	6.22E-14	0	1.79E-08	53	1.01E-10	0	1.53E-12	0	7.53E-12	0	1.15E-13	0	1.80E-08	53
U-235	1.85E-10	1	1.03E-09	3	6.63E-12	0	1.00E-13	0	4.95E-13	0	7.58E-15	0	1.23E-09	4
U-238	9.29E-10	3	1.34E-08	40	1.12E-10	0	1.70E-12	0	8.37E-12	0	1.28E-13	0	1.45E-08	43
Total	1.11E-09	3	3.23E-08	96	2.20E-10	1	3.33E-12	0	1.64E-11	0	2.51E-13	0	3.37E-08	100

* Sum of risk from all releases and from primary contamination via all but the Radon pathway.
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 Risk Report
 Title : Shiprock GW Evap. Pond Offsite Res. Location F_ Atm. Transport_Rem. Alts 2 & 3
 File : SHIPROCK_ALTS 2_3_OFFSITE RESF.ROF

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t = 1 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Airborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Waterborne	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Airborne == Radon that diffused from contaminated soil Waterborne == Radon derived from household water

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

0

From releases to ground water and to surface water

0

	Ground		Fish		Radon		Plant		Meat		Milk		Soil		Water	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-235	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
U-238	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0
Total	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0	0.00E+00	0

0

Total Excess Cancer Risk CNRSI(i,p,t)** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t = 1 years

	Directly from primary contamination and from release to atmosphere (Inhalation excludes radon)															
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		All Pathways***	
Radio- Nuclide	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%	risk	%
U-234	6.26E-14	0	1.79E-08	53	0.00E+00	0	1.01E-10	0	1.53E-12	0	7.53E-12	0	1.15E-13	0	1.80E-08	53
U-235	1.85E-10	1	1.03E-09	3	0.00E+00	0	6.63E-12	0	1.00E-13	0	4.95E-13	0	7.58E-15	0	1.23E-09	4
U-238	9.29E-10	3	1.34E-08	40	0.00E+00	0	1.12E-10	0	1.70E-12	0	8.37E-12	0	1.28E-13	0	1.45E-08	43
Total	1.11E-09	3	3.23E-08	96	0.00E+00	0	2.20E-10	1	3.33E-12	0	1.64E-11	0	2.51E-13	0	3.37E-08	100

**CNRSI(i,p,t) includes contribution from progeny radionuclides

*** Sum of risk from all releases and from primary contamination via all pathways.

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 Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport_Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1(20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1(21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1(22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1(23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1(24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1(25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1(26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1(27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1(28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1(29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1(30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1(31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1(32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1(33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1(34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1(35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2(1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2(2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2(3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2(4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2(5)
B-1	U-234		3.479E-02	3.479E-02	DCF2(6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2(7)
B-1	U-238		2.973E-02	2.973E-02	DCF2(8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3(1)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3(2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3(3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3(4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3(5)
D-1	U-234	1.831E-04	1.831E-04	DCF3(6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3(7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC (2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC (2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC (3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC (3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC (4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC (4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC (5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC (5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC (6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC (7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC (8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC (9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.500E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.750E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	1.900E-06	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	1.200E-07	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	1.700E-06	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1 (6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1 (7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1 (8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.670E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.399E-03		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.056E-02		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.236E-05		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	7.000E-07	1.000E-04	---		MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---		ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	6.550E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	7.990E-02	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Site-Specific Parameter Summary (continued)

0		User	Used by RESRAD	Parameter
Menu	Parameter	Input	Default (If different from user input)	Name

R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	4.490E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	7.000E-07	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | 8.000E-02 | 8.000E-02 | --- | TE(3)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	25000.00 square meters	U-234	1.900E-06
Thickness:	0.15 meters	U-235	1.200E-07
Cover Depth:	0.00 meters	U-238	1.700E-06

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
TDOSE(t): 2.473E-07 2.430E-07 2.346E-07 2.072E-07 1.441E-07 3.293E-08 0.000E+00 6.308E-11
M(t): 9.894E-09 9.721E-09 9.384E-09 8.286E-09 5.763E-09 1.317E-09 0.000E+00 2.523E-12
0Maximum TDOSE(t): 2.473E-07 mrem/yr at t = 0.000E+00 years
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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	3.475E-10	0.0014	1.612E-11	0.0001	0.000E+00	0.0000	1.249E-08	0.0505	3.901E-09	0.0158	9.939E-09	0.0402	1.136E-08	0.0459
U-235	4.433E-08	0.1792	9.171E-13	0.0000	0.000E+00	0.0000	7.498E-10	0.0030	2.345E-10	0.0009	5.965E-10	0.0024	6.818E-10	0.0028
U-238	1.300E-07	0.5255	1.234E-11	0.0000	0.000E+00	0.0000	1.083E-08	0.0438	3.384E-09	0.0137	8.622E-09	0.0349	9.854E-09	0.0398
Total	1.747E-07	0.7062	2.938E-11	0.0001	0.000E+00	0.0000	2.407E-08	0.0973	7.519E-09	0.0304	1.916E-08	0.0775	2.190E-08	0.0885

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.805E-08	0.1538
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.660E-08	0.1884
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.627E-07	0.6578
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.473E-07	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	3.424E-10	0.0014	1.578E-11	0.0001	0.000E+00	0.0000	1.222E-08	0.0503	3.818E-09	0.0157	9.728E-09	0.0400	1.112E-08	0.0458
U-235	4.365E-08	0.1796	8.981E-13	0.0000	0.000E+00	0.0000	7.345E-10	0.0030	2.304E-10	0.0009	5.838E-10	0.0024	6.675E-10	0.0027

U-238	1.279E-07	0.5263	1.208E-11	0.0000	0.000E+00	0.0000	1.060E-08	0.0436	3.312E-09	0.0136	8.439E-09	0.0347	9.645E-09	0.0397
Total	1.719E-07	0.7073	2.876E-11	0.0001	0.000E+00	0.0000	2.356E-08	0.0970	7.361E-09	0.0303	1.875E-08	0.0772	2.143E-08	0.0882

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.725E-08	0.1533
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.587E-08	0.1887
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.599E-07	0.6580
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.430E-07	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	3.324E-10	0.0014	1.512E-11	0.0001	0.000E+00	0.0000	1.171E-08	0.0499	3.658E-09	0.0156	9.318E-09	0.0397	1.065E-08	0.0454
U-235	4.231E-08	0.1804	8.613E-13	0.0000	0.000E+00	0.0000	7.048E-10	0.0030	2.223E-10	0.0009	5.592E-10	0.0024	6.396E-10	0.0027
U-238	1.238E-07	0.5277	1.157E-11	0.0000	0.000E+00	0.0000	1.016E-08	0.0433	3.173E-09	0.0135	8.083E-09	0.0345	9.238E-09	0.0394
Total	1.664E-07	0.7095	2.755E-11	0.0001	0.000E+00	0.0000	2.257E-08	0.0962	7.052E-09	0.0301	1.796E-08	0.0766	2.053E-08	0.0875

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.568E-08	0.1521
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.444E-08	0.1894
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.545E-07	0.6585
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.346E-07	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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0*Sum of all water independent and dependent pathways.

Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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[illegible]

U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.960E-08	0.1360
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.872E-08	0.1993
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.576E-08	0.6646
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.441E-07	1.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	5.851E-11	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	4.494E-12	0.0712	2.486E-14	0.0004	5.468E-14	0.0009	6.308E-11	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.851E-11	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	4.494E-12	0.0712	2.486E-14	0.0004	5.468E-14	0.0009	6.308E-11	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	2.003E-02	1.960E-02	1.878E-02	1.613E-02	1.030E-02	1.535E-03	0.000E+00	0.000E+00
	U-234	Th-230	1.000E+00	1.949E-07	5.628E-07	1.265E-06	3.422E-06	7.405E-06	6.640E-06	0.000E+00	0.000E+00
	U-234	Ra-226+D	1.000E+00	3.491E-09	2.442E-08	1.268E-07	1.049E-06	6.980E-06	2.691E-05	0.000E+00	0.000E+00
	U-234	Pb-210+D	1.000E+00	1.045E-11	1.377E-10	1.432E-09	3.099E-08	4.708E-07	2.654E-06	0.000E+00	0.000E+00
	U-234	ΣDSR(j)		2.003E-02	1.960E-02	1.878E-02	1.614E-02	1.032E-02	1.572E-03	0.000E+00	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	3.883E-01	3.822E-01	3.703E-01	3.311E-01	2.390E-01	6.127E-02	0.000E+00	0.000E+00
	U-235+D	Pa-231	1.000E+00	7.167E-06	2.208E-05	5.023E-05	1.310E-04	2.468E-04	1.302E-04	0.000E+00	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	1.306E-07	8.636E-07	4.215E-06	2.964E-05	1.315E-04	1.665E-04	0.000E+00	5.257E-04
	U-235+D	ΣDSR(j)		3.883E-01	3.822E-01	3.703E-01	3.313E-01	2.393E-01	6.157E-02	0.000E+00	5.257E-04
0U	U-238	U-238	5.450E-07	9.792E-09	9.585E-09	9.181E-09	7.886E-09	5.031E-09	7.455E-10	0.000E+00	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00
	U-238+D	U-234	1.000E+00	2.817E-08	8.293E-08	1.855E-07	4.782E-07	8.870E-07	4.357E-07	0.000E+00	0.000E+00
	U-238+D	Th-230	1.000E+00	1.878E-13	1.248E-12	6.281E-12	4.956E-11	2.952E-10	7.175E-10	0.000E+00	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	2.448E-15	3.670E-14	4.201E-13	1.021E-11	1.909E-10	2.154E-09	0.000E+00	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	6.116E-18	1.657E-16	3.684E-15	2.325E-13	1.019E-11	1.826E-10	0.000E+00	0.000E+00
	U-238+D	ΣDSR(j)		9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.248E+03	1.275E+03	1.331E+03	1.549E+03	2.424E+03	1.591E+04	*6.222E+09	*6.222E+09	
U-235	6.438E+01	6.541E+01	6.751E+01	7.546E+01	1.045E+02	4.061E+02	*2.160E+06	4.756E+04	
U-238	2.612E+02	2.658E+02	2.751E+02	3.108E+02	4.438E+02	1.884E+03	*3.361E+05	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	1.900E-06	0.000E+00	2.003E-02	1.248E+03	2.003E-02	1.248E+03
U-235	1.200E-07	0.000E+00	3.883E-01	6.438E+01	3.883E-01	6.438E+01
U-238	1.700E-06	0.000E+00	9.570E-02	2.612E+02	9.570E-02	2.612E+02

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Individual Nuclide Dose Summed Over All Pathways										
Parent Nuclide and Branch Fraction Indicated										
0Nuclide	Parent	THF(i)	DOSE(j,t), mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		3.805E-08	3.725E-08	3.568E-08	3.065E-08	1.957E-08	2.917E-09	0.000E+00 0.000E+00
U-234	U-238	1.000E+00		4.789E-14	1.410E-13	3.153E-13	8.129E-13	1.508E-12	7.407E-13	0.000E+00 0.000E+00
U-234	ΣDOSE(j)			3.805E-08	3.725E-08	3.568E-08	3.065E-08	1.957E-08	2.918E-09	0.000E+00 0.000E+00
0Th-230	U-234	1.000E+00		3.703E-13	1.069E-12	2.404E-12	6.502E-12	1.407E-11	1.262E-11	0.000E+00 0.000E+00
Th-230	U-238	1.000E+00		3.193E-19	2.122E-18	1.068E-17	8.425E-17	5.019E-16	1.220E-15	0.000E+00 0.000E+00
Th-230	ΣDOSE(j)			3.703E-13	1.069E-12	2.404E-12	6.502E-12	1.407E-11	1.262E-11	0.000E+00 0.000E+00
0Ra-226	U-234	1.000E+00		6.633E-15	4.639E-14	2.408E-13	1.993E-12	1.326E-11	5.114E-11	0.000E+00 0.000E+00
Ra-226	U-238	1.000E+00		4.161E-21	6.240E-20	7.141E-19	1.735E-17	3.246E-16	3.661E-15	0.000E+00 0.000E+00
Ra-226	ΣDOSE(j)			6.633E-15	4.639E-14	2.408E-13	1.993E-12	1.326E-11	5.114E-11	0.000E+00 0.000E+00
0Pb-210	U-234	1.000E+00		1.985E-17	2.616E-16	2.722E-15	5.888E-14	8.945E-13	5.043E-12	0.000E+00 0.000E+00
Pb-210	U-238	1.000E+00		1.040E-23	2.817E-22	6.263E-21	3.952E-19	1.732E-17	3.104E-16	0.000E+00 0.000E+00
Pb-210	ΣDOSE(j)			1.985E-17	2.616E-16	2.722E-15	5.888E-14	8.946E-13	5.043E-12	0.000E+00 0.000E+00
0U-235	U-235	1.000E+00		4.660E-08	4.586E-08	4.443E-08	3.974E-08	2.868E-08	7.352E-09	0.000E+00 0.000E+00
0Pa-231	U-235	1.000E+00		8.601E-13	2.649E-12	6.027E-12	1.572E-11	2.961E-11	1.562E-11	0.000E+00 0.000E+00
0Ac-227	U-235	1.000E+00		1.567E-14	1.036E-13	5.058E-13	3.556E-12	1.578E-11	1.998E-11	0.000E+00 6.308E-11
0U-238	U-238	5.450E-07		1.665E-14	1.629E-14	1.561E-14	1.341E-14	8.553E-15	1.267E-15	0.000E+00 0.000E+00
U-238	U-238	1.000E+00		1.627E-07	1.599E-07	1.545E-07	1.367E-07	9.576E-08	2.255E-08	0.000E+00 0.000E+00
U-238	ΣDOSE(j)			1.627E-07	1.599E-07	1.545E-07	1.367E-07	9.576E-08	2.255E-08	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Individual Nuclide Soil Concentration										
Parent Nuclide and Branch Fraction Indicated										
0Nuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		1.900E-06	1.872E-06	1.818E-06	1.639E-06	1.220E-06	4.338E-07	2.261E-08 7.306E-13
U-234	U-238	1.000E+00		0.000E+00	4.729E-12	1.378E-11	4.141E-11	9.245E-11	1.096E-10	1.714E-11 1.848E-15
U-234	ΣS(j):			1.900E-06	1.872E-06	1.818E-06	1.639E-06	1.220E-06	4.339E-07	2.262E-08 7.325E-13
0Th-230	U-234	1.000E+00		0.000E+00	1.734E-11	5.127E-11	1.624E-10	4.233E-10	9.115E-10	1.163E-09 1.159E-09
Th-230	U-238	1.000E+00		0.000E+00	2.185E-17	1.928E-16	2.001E-15	1.486E-14	8.782E-14	1.885E-13 1.986E-13
Th-230	ΣS(j):			0.000E+00	1.734E-11	5.127E-11	1.624E-10	4.233E-10	9.116E-10	1.163E-09 1.159E-09
0Ra-226	U-234	1.000E+00		0.000E+00	3.752E-15	3.319E-14	3.474E-13	2.644E-12	1.686E-11	4.133E-11 4.577E-11
Ra-226	U-238	1.000E+00		0.000E+00	3.155E-21	8.347E-20	2.881E-18	6.369E-17	1.202E-15	6.029E-15 7.839E-15
Ra-226	ΣS(j):			0.000E+00	3.752E-15	3.319E-14	3.474E-13	2.644E-12	1.686E-11	4.134E-11 4.578E-11
0Pb-210	U-234	1.000E+00		0.000E+00	3.876E-17	1.013E-15	3.359E-14	6.675E-13	9.413E-12	3.208E-11 3.702E-11
Pb-210	U-238	1.000E+00		0.000E+00	2.448E-23	1.922E-21	2.126E-19	1.268E-17	5.764E-16	4.495E-15 6.340E-15
Pb-210	ΣS(j):			0.000E+00	3.876E-17	1.013E-15	3.360E-14	6.675E-13	9.413E-12	3.208E-11 3.703E-11
0U-235	U-235	1.000E+00		1.200E-07	1.182E-07	1.148E-07	1.035E-07	7.705E-08	2.740E-08	1.429E-09 4.628E-14
0Pa-231	U-235	1.000E+00		0.000E+00	2.502E-12	7.287E-12	2.190E-11	4.889E-11	5.792E-11	9.042E-12 9.688E-16

0Ac-227	U-235	1.000E+00	0.000E+00	3.912E-14	3.300E-13	2.937E-12	1.458E-11	2.795E-11	5.022E-12	5.631E-16
0U-238	U-238	5.450E-07	9.265E-13	9.129E-13	8.863E-13	7.993E-13	5.949E-13	2.116E-13	1.103E-14	3.573E-19
U-238	U-238	1.000E+00	1.700E-06	1.675E-06	1.626E-06	1.467E-06	1.092E-06	3.882E-07	2.024E-08	6.556E-13
U-238	ΣS(j):		1.700E-06	1.675E-06	1.626E-06	1.467E-06	1.092E-06	3.882E-07	2.024E-08	6.556E-13

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 9.02 seconds

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Time= 0.000E+00	5
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Time= 3.000E+00	11
Time= 1.000E+01	14
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Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTOR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTOR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	5.195E-01	5.192E-01	5.188E-01	5.169E-01	5.090E-01	4.061E-01	0.000E+00	0.000E+00
At-218	2.740E-11	5.070E-01	5.066E-01	5.059E-01	5.032E-01	4.932E-01	4.126E-01	0.000E+00	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	5.169E-01	5.167E-01	5.163E-01	5.145E-01	5.075E-01	4.337E-01	0.000E+00	0.000E+00
Bi-211	1.900E-07	4.875E-01	4.869E-01	4.855E-01	4.805E-01	4.622E-01	3.177E-01	0.000E+00	0.000E+00
Bi-214	7.340E-06	4.352E-01	4.342E-01	4.322E-01	4.248E-01	4.003E-01	2.579E-01	0.000E+00	0.000E+00
Bi-215	1.080E-06	4.749E-01	4.741E-01	4.726E-01	4.667E-01	4.462E-01	2.988E-01	0.000E+00	0.000E+00
Fr-223	1.350E-07	5.060E-01	5.056E-01	5.047E-01	5.013E-01	4.882E-01	3.630E-01	0.000E+00	0.000E+00
Hg-206	4.830E-07	4.908E-01	4.902E-01	4.889E-01	4.842E-01	4.667E-01	3.231E-01	0.000E+00	0.000E+00
Pa-231	1.270E-07	4.940E-01	4.934E-01	4.923E-01	4.878E-01	4.712E-01	3.299E-01	0.000E+00	0.000E+00
Pa-234	6.620E-06	4.590E-01	4.581E-01	4.563E-01	4.498E-01	4.273E-01	2.821E-01	0.000E+00	0.000E+00
Pa-234m	9.060E-08	4.683E-01	4.675E-01	4.659E-01	4.600E-01	4.398E-01	3.064E-01	0.000E+00	0.000E+00
Pb-210	1.480E-09	5.384E-01	5.384E-01	5.384E-01	5.384E-01	5.383E-01	5.262E-01	0.000E+00	0.000E+00
Pb-211	2.910E-07	4.702E-01	4.694E-01	4.678E-01	4.616E-01	4.402E-01	2.916E-01	0.000E+00	0.000E+00
Pb-214	9.940E-07	4.897E-01	4.891E-01	4.878E-01	4.830E-01	4.654E-01	3.219E-01	0.000E+00	0.000E+00
Po-210	4.510E-11	4.576E-01	4.568E-01	4.550E-01	4.483E-01	4.256E-01	2.802E-01	0.000E+00	0.000E+00
Po-211	3.760E-08	4.588E-01	4.579E-01	4.562E-01	4.496E-01	4.272E-01	2.818E-01	0.000E+00	0.000E+00
Po-214	3.850E-10	4.594E-01	4.585E-01	4.568E-01	4.502E-01	4.277E-01	2.809E-01	0.000E+00	0.000E+00
Po-215	7.480E-10	4.807E-01	4.799E-01	4.785E-01	4.730E-01	4.533E-01	3.068E-01	0.000E+00	0.000E+00
Po-218	6.840E-15	5.225E-01	5.225E-01	5.225E-01	5.224E-01	5.208E-01	4.607E-01	0.000E+00	0.000E+00
Ra-223	4.550E-07	5.029E-01	5.024E-01	5.015E-01	4.979E-01	4.840E-01	3.519E-01	0.000E+00	0.000E+00
Ra-226	2.500E-08	5.061E-01	5.057E-01	5.049E-01	5.015E-01	4.886E-01	3.569E-01	0.000E+00	0.000E+00
Rn-218	3.390E-09	4.681E-01	4.673E-01	4.656E-01	4.594E-01	4.380E-01	2.907E-01	0.000E+00	0.000E+00
Rn-219	2.350E-07	4.899E-01	4.893E-01	4.880E-01	4.832E-01	4.656E-01	3.219E-01	0.000E+00	0.000E+00
Rn-222	1.690E-09	4.770E-01	4.762E-01	4.747E-01	4.689E-01	4.485E-01	3.005E-01	0.000E+00	0.000E+00
Th-227	4.450E-07	4.983E-01	4.978E-01	4.967E-01	4.926E-01	4.773E-01	3.392E-01	0.000E+00	0.000E+00
Th-230	8.450E-10	5.202E-01	5.200E-01	5.197E-01	5.185E-01	5.126E-01	4.175E-01	0.000E+00	0.000E+00
Th-231	2.490E-08	5.332E-01	5.330E-01	5.327E-01	5.314E-01	5.256E-01	4.330E-01	0.000E+00	0.000E+00
Th-234	1.780E-08	5.204E-01	5.203E-01	5.202E-01	5.196E-01	5.160E-01	4.335E-01	0.000E+00	0.000E+00
Tl-206	6.110E-09	5.148E-01	5.145E-01	5.140E-01	5.120E-01	5.045E-01	4.319E-01	0.000E+00	0.000E+00
Tl-207	1.590E-08	4.838E-01	4.832E-01	4.819E-01	4.771E-01	4.602E-01	3.407E-01	0.000E+00	0.000E+00
Tl-210	1.340E-05	4.400E-01	4.391E-01	4.371E-01	4.299E-01	4.058E-01	2.634E-01	0.000E+00	0.000E+00
U-234	2.530E-10	5.332E-01	5.331E-01	5.328E-01	5.316E-01	5.263E-01	4.454E-01	0.000E+00	0.000E+00
U-235	5.510E-07	5.068E-01	5.064E-01	5.055E-01	5.023E-01	4.896E-01	3.587E-01	0.000E+00	0.000E+00
U-238	1.240E-10	5.147E-01	5.143E-01	5.136E-01	5.107E-01	5.001E-01	4.030E-01	0.000E+00	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	4.684E-10	6.888E-05	2.150E-05	5.484E-05	6.269E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.079E-04
U-235	2.959E-11	4.350E-06	1.358E-06	3.464E-06	3.960E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.313E-05
U-238	4.191E-10	6.163E-05	1.924E-05	4.907E-05	5.609E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.860E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.019E-16	0.0000	6.013E-21	0.0000	2.762E-18	0.0000	1.795E-19	0.0000	7.214E-20	0.0000	2.467E-18	0.0000
Pa-231	4.088E-17	0.0000	1.113E-20	0.0000	1.936E-17	0.0000	2.574E-17	0.0000	3.721E-20	0.0000	4.412E-18	0.0000
Pb-210	7.265E-21	0.0000	2.135E-23	0.0000	1.430E-18	0.0000	3.056E-19	0.0000	1.599E-19	0.0000	3.191E-19	0.0000
Ra-226	6.629E-17	0.0000	1.140E-22	0.0000	4.877E-18	0.0000	5.012E-19	0.0000	6.691E-19	0.0000	2.785E-19	0.0000
Th-230	2.277E-18	0.0000	3.883E-20	0.0000	8.015E-18	0.0000	1.792E-18	0.0000	1.320E-19	0.0000	1.817E-17	0.0000
U-234	5.510E-15	0.0015	2.585E-16	0.0001	1.305E-13	0.0357	4.077E-14	0.0111	1.039E-13	0.0284	1.187E-13	0.0325
U-235	7.492E-13	0.2049	1.468E-17	0.0000	8.425E-15	0.0023	2.632E-15	0.0007	6.705E-15	0.0018	7.663E-15	0.0021
U-238	2.038E-12	0.5571	1.968E-16	0.0001	1.474E-13	0.0403	4.605E-14	0.0126	1.173E-13	0.0321	1.341E-13	0.0367

Total 2.792E-12 0.7635 4.701E-16 0.0001 2.864E-13 0.0783 8.948E-14 0.0245 2.279E-13 0.0623 2.605E-13 0.0712
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 6
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.074E-16	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.044E-17	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.222E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.262E-17	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.042E-17	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.996E-13	0.1093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.746E-13	0.2118
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.483E-12	0.6788
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.657E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.579E-15	0.0015	2.586E-16	0.0001	0.000E+00	0.0000	1.305E-13	0.0357	4.077E-14	0.0111	1.039E-13	0.0284	1.187E-13	0.0325

U-235	7.493E-13	0.2049	1.470E-17	0.0000	0.000E+00	0.0000	8.447E-15	0.0023	2.658E-15	0.0007	6.705E-15	0.0018	7.670E-15	0.0021
U-238	2.038E-12	0.5571	1.968E-16	0.0001	0.000E+00	0.0000	1.474E-13	0.0403	4.605E-14	0.0126	1.173E-13	0.0321	1.341E-13	0.0367
Total	2.792E-12	0.7635	4.701E-16	0.0001	0.000E+00	0.0000	2.864E-13	0.0783	8.948E-14	0.0245	2.279E-13	0.0623	2.605E-13	0.0712

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 7
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.997E-13	0.1093
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.748E-13	0.2119
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.483E-12	0.6788
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.657E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 8
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	9.581E-18	1.705E-12	8.028E-13	3.834E-14	1.282E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.828E-12
Pa-231	6.127E-16	3.510E-10	4.479E-10	8.615E-13	8.200E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.818E-10
Pb-210	9.492E-21	7.231E-15	1.468E-15	7.262E-16	1.270E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.070E-14
Ra-226	9.189E-19	2.017E-12	1.791E-13	2.676E-13	1.230E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.586E-12
Th-230	4.247E-15	2.631E-10	6.334E-11	5.389E-12	5.684E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.002E-10
U-234	4.585E-10	6.747E-05	2.107E-05	5.369E-05	6.136E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.036E-04
U-235	2.896E-11	4.261E-06	1.331E-06	3.391E-06	3.876E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.286E-05
U-238	4.102E-10	6.036E-05	1.886E-05	4.804E-05	5.490E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.822E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.115E-16	0.0000	6.556E-21	0.0000	3.011E-18	0.0000	1.919E-19	0.0000	7.865E-20	0.0000	2.690E-18	0.0000				
Pa-231	4.354E-17	0.0000	1.181E-20	0.0000	2.055E-17	0.0000	2.731E-17	0.0000	3.946E-20	0.0000	4.682E-18	0.0000				
Pb-210	8.344E-21	0.0000	2.438E-23	0.0000	1.632E-18	0.0000	3.489E-19	0.0000	1.825E-19	0.0000	3.644E-19	0.0000				
Ra-226	7.362E-17	0.0000	1.262E-22	0.0000	5.398E-18	0.0000	5.549E-19	0.0000	7.407E-19	0.0000	3.081E-19	0.0000				
Th-230	2.440E-18	0.0000	4.140E-20	0.0000	8.546E-18	0.0000	1.910E-18	0.0000	1.407E-19	0.0000	1.937E-17	0.0000				
U-234	5.427E-15	0.0015	2.529E-16	0.0001	1.277E-13	0.0355	3.988E-14	0.0111	1.016E-13	0.0283	1.161E-13	0.0323				
U-235	7.374E-13	0.2052	1.436E-17	0.0000	8.242E-15	0.0023	2.574E-15	0.0007	6.559E-15	0.0018	7.496E-15	0.0021				
U-238	2.004E-12	0.5578	1.925E-16	0.0001	1.442E-13	0.0401	4.505E-14	0.0125	1.148E-13	0.0319	1.312E-13	0.0365				
Total	2.747E-12	0.7646	4.598E-16	0.0001	2.802E-13	0.0780	8.754E-14	0.0244	2.229E-13	0.0620	2.548E-13	0.0709				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.175E-16	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.613E-17	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.536E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.062E-17	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.245E-17	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.910E-13	0.1088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.623E-13	0.2122
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.440E-12	0.6789
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.593E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.503E-15	0.0015	2.529E-16	0.0001	0.000E+00	0.0000	1.277E-13	0.0355	3.988E-14	0.0111	1.016E-13	0.0283	1.161E-13	0.0323
U-235	7.376E-13	0.2053	1.438E-17	0.0000	0.000E+00	0.0000	8.265E-15	0.0023	2.602E-15	0.0007	6.559E-15	0.0018	7.504E-15	0.0021
U-238	2.004E-12	0.5578	1.925E-16	0.0001	0.000E+00	0.0000	1.442E-13	0.0401	4.505E-14	0.0125	1.148E-13	0.0319	1.312E-13	0.0365
Total	2.747E-12	0.7646	4.598E-16	0.0001	0.000E+00	0.0000	2.802E-13	0.0780	8.754E-14	0.0244	2.229E-13	0.0620	2.548E-13	0.0709

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.911E-13	0.1088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.625E-13	0.2122
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.440E-12	0.6789
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.593E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 11

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	7.973E-17	1.261E-11	2.561E-12	3.142E-13	1.067E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.615E-11
Pa-231	1.761E-15	1.027E-09	1.350E-09	2.122E-12	2.356E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.615E-09
Pb-210	2.449E-19	1.593E-13	3.402E-14	1.725E-14	3.277E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.434E-13
Ra-226	8.020E-18	1.845E-11	1.819E-12	2.505E-12	1.073E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.384E-11
Th-230	1.239E-14	7.414E-10	1.694E-10	1.307E-11	1.658E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.582E-09
U-234	4.392E-10	6.462E-05	2.019E-05	5.143E-05	5.878E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.950E-04
U-235	2.774E-11	4.081E-06	1.275E-06	3.248E-06	3.712E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.232E-05
U-238	3.929E-10	5.782E-05	1.806E-05	4.601E-05	5.259E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.745E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.320E-16	0.0000	7.692E-21	0.0000	3.529E-18	0.0000	2.161E-19	0.0000	9.227E-20	0.0000	3.157E-18	0.0000
Pa-231	4.857E-17	0.0000	1.307E-20	0.0000	2.273E-17	0.0000	3.023E-17	0.0000	4.353E-20	0.0000	5.179E-18	0.0000
Pb-210	1.083E-20	0.0000	3.128E-23	0.0000	2.092E-18	0.0000	4.470E-19	0.0000	2.340E-19	0.0000	4.675E-19	0.0000
Ra-226	8.960E-17	0.0000	1.525E-22	0.0000	6.525E-18	0.0000	6.711E-19	0.0000	8.954E-19	0.0000	3.724E-19	0.0000
Th-230	2.757E-18	0.0000	4.631E-20	0.0000	9.553E-18	0.0000	2.134E-18	0.0000	1.568E-19	0.0000	2.166E-17	0.0000
U-234	5.265E-15	0.0015	2.419E-16	0.0001	1.222E-13	0.0352	3.816E-14	0.0110	9.721E-14	0.0280	1.111E-13	0.0320
U-235	7.144E-13	0.2060	1.374E-17	0.0000	7.885E-15	0.0023	2.463E-15	0.0007	6.275E-15	0.0018	7.172E-15	0.0021
U-238	1.939E-12	0.5591	1.842E-16	0.0001	1.380E-13	0.0398	4.310E-14	0.0124	1.098E-13	0.0317	1.255E-13	0.0362

Total 2.659E-12 0.7666 4.400E-16 0.0001 2.681E-13 0.0773 8.375E-14 0.0241 2.133E-13 0.0615 2.438E-13 0.0703
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 12
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.390E-16	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.068E-16	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.251E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.807E-17	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.631E-17	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.741E-13	0.1079
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.382E-13	0.2129
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.355E-12	0.6792
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.468E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.357E-15	0.0015	2.420E-16	0.0001	0.000E+00	0.0000	1.222E-13	0.0352	3.816E-14	0.0110	9.720E-14	0.0280	1.111E-13	0.0320

U-235	7.146E-13	0.2060	1.376E-17	0.0000	0.000E+00	0.0000	7.911E-15	0.0023	2.493E-15	0.0007	6.275E-15	0.0018	7.180E-15	0.0021
U-238	1.939E-12	0.5591	1.842E-16	0.0001	0.000E+00	0.0000	1.380E-13	0.0398	4.310E-14	0.0124	1.098E-13	0.0317	1.255E-13	0.0362
Total	2.659E-12	0.7666	4.400E-16	0.0001	0.000E+00	0.0000	2.681E-13	0.0773	8.375E-14	0.0241	2.133E-13	0.0615	2.438E-13	0.0703

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 13
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.742E-13	0.1079
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.385E-13	0.2129
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.355E-12	0.6792
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.468E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 14
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	6.759E-16	1.020E-10	8.657E-12	2.648E-12	9.046E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.038E-10
Pa-231	5.040E-15	2.958E-09	3.929E-09	5.718E-12	6.745E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.568E-09
Pb-210	7.731E-18	4.704E-12	1.006E-12	5.231E-13	1.035E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.268E-12
Ra-226	7.995E-17	1.869E-10	1.909E-11	2.560E-11	1.070E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.423E-10
Th-230	3.737E-14	2.209E-09	4.949E-10	3.662E-11	5.002E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.743E-09
U-234	3.772E-10	5.550E-05	1.734E-05	4.417E-05	5.048E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.675E-04
U-235	2.382E-11	3.505E-06	1.095E-06	2.790E-06	3.188E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.058E-05
U-238	3.375E-10	4.966E-05	1.551E-05	3.952E-05	4.517E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.499E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	2.084E-16	0.0001	1.176E-20	0.0000	5.381E-18	0.0000	2.896E-19	0.0000	1.410E-19	0.0000	4.827E-18	0.0000				
Pa-231	6.333E-17	0.0000	1.645E-20	0.0000	2.864E-17	0.0000	3.813E-17	0.0000	5.449E-20	0.0000	6.521E-18	0.0000				
Pb-210	2.341E-20	0.0000	6.487E-23	0.0000	4.324E-18	0.0000	9.240E-19	0.0000	4.844E-19	0.0000	9.695E-19	0.0000				
Ra-226	1.576E-16	0.0001	2.608E-22	0.0000	1.117E-17	0.0000	1.151E-18	0.0000	1.534E-18	0.0000	6.370E-19	0.0000				
Th-230	3.789E-18	0.0000	6.100E-20	0.0000	1.257E-17	0.0000	2.803E-18	0.0000	2.052E-19	0.0000	2.854E-17	0.0000				
U-234	4.732E-15	0.0015	2.069E-16	0.0001	1.044E-13	0.0341	3.262E-14	0.0107	8.311E-14	0.0271	9.499E-14	0.0310				
U-235	6.388E-13	0.2087	1.175E-17	0.0000	6.741E-15	0.0022	2.106E-15	0.0007	5.365E-15	0.0018	6.132E-15	0.0020				
U-238	1.725E-12	0.5636	1.575E-16	0.0001	1.180E-13	0.0385	3.685E-14	0.0120	9.388E-14	0.0307	1.073E-13	0.0351				
Total	2.369E-12	0.7739	3.762E-16	0.0001	2.292E-13	0.0749	7.162E-14	0.0234	1.824E-13	0.0596	2.085E-13	0.0681				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.190E-16	0.0001
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.367E-16	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.726E-18	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.721E-16	0.0001
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.797E-17	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.201E-13	0.1046
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.591E-13	0.2153
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.081E-12	0.6799
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.061E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	4.893E-15	0.0016	2.069E-16	0.0001	0.000E+00	0.0000	1.045E-13	0.0341	3.263E-14	0.0107	8.311E-14	0.0271	9.501E-14	0.0310
U-235	6.391E-13	0.2088	1.177E-17	0.0000	0.000E+00	0.0000	6.776E-15	0.0022	2.144E-15	0.0007	5.365E-15	0.0018	6.143E-15	0.0020
U-238	1.725E-12	0.5636	1.575E-16	0.0001	0.000E+00	0.0000	1.180E-13	0.0385	3.685E-14	0.0120	9.388E-14	0.0307	1.073E-13	0.0351
Total	2.369E-12	0.7739	3.762E-16	0.0001	0.000E+00	0.0000	2.292E-13	0.0749	7.162E-14	0.0234	1.824E-13	0.0596	2.085E-13	0.0681

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.203E-13	0.1046
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.595E-13	0.2154
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.081E-12	0.6799
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.061E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.876E-15	4.283E-10	2.091E-11	1.124E-11	3.849E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.453E-10
Pa-231	9.643E-15	5.671E-09	7.553E-09	1.075E-11	1.291E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.453E-08
Pb-210	1.317E-16	7.849E-11	1.677E-11	8.796E-12	1.762E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.217E-10
Ra-226	5.214E-16	1.225E-09	1.263E-10	1.682E-10	6.978E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.589E-09
Th-230	8.349E-14	4.919E-09	1.095E-09	8.003E-11	1.117E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.727E-08
U-234	2.406E-10	3.541E-05	1.106E-05	2.818E-05	3.220E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.068E-04
U-235	1.520E-11	2.236E-06	6.986E-07	1.780E-06	2.034E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.748E-06
U-238	2.153E-10	3.168E-05	9.896E-06	2.521E-05	2.881E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.560E-05

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.937E-16	0.0002	1.983E-20	0.0000	9.041E-18	0.0000	3.960E-19	0.0000	2.377E-19	0.0000	8.139E-18	0.0000
Pa-231	8.578E-17	0.0000	1.979E-20	0.0000	3.448E-17	0.0000	4.594E-17	0.0000	6.517E-20	0.0000	7.845E-18	0.0000
Pb-210	9.647E-20	0.0000	2.315E-22	0.0000	1.536E-17	0.0000	3.281E-18	0.0000	1.724E-18	0.0000	3.460E-18	0.0000
Ra-226	4.143E-16	0.0002	6.243E-22	0.0000	2.677E-17	0.0000	2.766E-18	0.0000	3.678E-18	0.0000	1.525E-18	0.0000
Th-230	6.124E-18	0.0000	8.523E-20	0.0000	1.755E-17	0.0000	3.905E-18	0.0000	2.847E-19	0.0000	3.988E-17	0.0000
U-234	3.470E-15	0.0016	1.299E-16	0.0001	6.557E-14	0.0309	2.048E-14	0.0097	5.218E-14	0.0246	5.963E-14	0.0281
U-235	4.595E-13	0.2165	7.374E-18	0.0000	4.233E-15	0.0020	1.322E-15	0.0006	3.368E-15	0.0016	3.849E-15	0.0018
U-238	1.224E-12	0.5766	9.887E-17	0.0000	7.407E-14	0.0349	2.314E-14	0.0109	5.894E-14	0.0278	6.736E-14	0.0317

Total 1.688E-12 0.7952 2.362E-16 0.0001 1.440E-13 0.0678 4.500E-14 0.0212 1.145E-13 0.0540 1.309E-13 0.0617
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 18
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.115E-16	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.741E-16	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.393E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.490E-16	0.0002
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.782E-17	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.015E-13	0.0949
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.723E-13	0.2226
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.447E-12	0.6820
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.122E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	3.890E-15	0.0018	1.299E-16	0.0001	0.000E+00	0.0000	6.562E-14	0.0309	2.049E-14	0.0097	5.218E-14	0.0246	5.967E-14	0.0281

U-235	4.600E-13	0.2168	7.414E-18	0.0000	0.000E+00	0.0000	4.276E-15	0.0020	1.369E-15	0.0006	3.368E-15	0.0016	3.865E-15	0.0018
U-238	1.224E-12	0.5766	9.888E-17	0.0000	0.000E+00	0.0000	7.408E-14	0.0349	2.314E-14	0.0109	5.894E-14	0.0278	6.737E-14	0.0317
Total	1.688E-12	0.7952	2.362E-16	0.0001	0.000E+00	0.0000	1.440E-13	0.0678	4.500E-14	0.0212	1.145E-13	0.0540	1.309E-13	0.0617

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 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E-13	0.0952
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.729E-13	0.2228
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.447E-12	0.6820
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.122E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 20
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.297E-15	3.408E-10	1.272E-11	8.976E-12	3.074E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.699E-10
Pa-231	4.760E-15	2.802E-09	3.737E-09	5.273E-12	6.371E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.182E-09
Pb-210	7.736E-16	4.581E-10	9.785E-11	5.147E-11	1.035E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.110E-10
Ra-226	1.385E-15	3.260E-09	3.378E-10	4.482E-10	1.854E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.231E-09
Th-230	7.492E-14	4.411E-09	9.807E-10	7.129E-11	1.003E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.549E-08
U-234	3.566E-11	5.249E-06	1.640E-06	4.176E-06	4.772E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.584E-05
U-235	2.252E-12	3.315E-07	1.036E-07	2.637E-07	3.014E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.000E-06
U-238	3.190E-11	4.697E-06	1.468E-06	3.736E-06	4.270E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.417E-05

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide												
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.110E-16	0.0007	9.046E-21	0.0000	4.115E-18	0.0000	1.520E-19	0.0000	1.084E-19	0.0000	3.712E-18	0.0000
Pa-231	4.909E-17	0.0001	6.558E-21	0.0000	1.144E-17	0.0000	1.526E-17	0.0000	2.151E-20	0.0000	2.600E-18	0.0000
Pb-210	5.555E-19	0.0000	5.503E-22	0.0000	3.639E-17	0.0001	7.774E-18	0.0000	4.088E-18	0.0000	8.224E-18	0.0000
Ra-226	9.286E-16	0.0021	8.567E-22	0.0000	3.680E-17	0.0001	3.816E-18	0.0000	5.060E-18	0.0000	2.092E-18	0.0000
Th-230	7.628E-18	0.0000	5.130E-20	0.0000	1.056E-17	0.0000	2.348E-18	0.0000	1.706E-19	0.0000	2.400E-17	0.0001
U-234	9.536E-16	0.0022	1.620E-17	0.0000	8.186E-15	0.0185	2.558E-15	0.0058	6.511E-15	0.0147	7.441E-15	0.0169
U-235	1.048E-13	0.2374	9.201E-19	0.0000	5.284E-16	0.0012	1.652E-16	0.0004	4.203E-16	0.0010	4.803E-16	0.0011
U-238	2.801E-13	0.6343	1.234E-17	0.0000	9.248E-15	0.0209	2.890E-15	0.0065	7.355E-15	0.0167	8.405E-15	0.0190
Total	3.872E-13	0.8768	2.953E-17	0.0001	1.806E-14	0.0409	5.643E-15	0.0128	1.430E-14	0.0324	1.637E-14	0.0371

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.191E-16	0.0007
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.842E-17	0.0002
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.703E-17	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.763E-16	0.0022
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.475E-17	0.0001
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.567E-14	0.0581
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.064E-13	0.2410
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.080E-13	0.6975
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.416E-13	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.890E-15	0.0043	1.625E-17	0.0000	0.000E+00	0.0000	8.268E-15	0.0187	2.572E-15	0.0058	6.519E-15	0.0148	7.473E-15	0.0169
U-235	1.052E-13	0.2382	9.357E-19	0.0000	0.000E+00	0.0000	5.440E-16	0.0012	1.806E-16	0.0004	4.204E-16	0.0010	4.866E-16	0.0011
U-238	2.801E-13	0.6343	1.234E-17	0.0000	0.000E+00	0.0000	9.250E-15	0.0209	2.891E-15	0.0065	7.357E-15	0.0167	8.407E-15	0.0190
Total	3.872E-13	0.8768	2.953E-17	0.0001	0.000E+00	0.0000	1.806E-14	0.0409	5.643E-15	0.0128	1.430E-14	0.0324	1.637E-14	0.0371

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.674E-14	0.0605
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.068E-13	0.2419
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.080E-13	0.6975
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.416E-13	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 23

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A_Atm Transport_Post-Rem.
File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST_REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

[illegible]

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+02 years
Radionuclides

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.00E+02 years

[illegible]

1RESRAD-ONSITE, Version 7.2 T_{1/2} Limit = 180 days 03/25/2023 13:36 Page 24

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)

Water Dependent Pathways

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of

0

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)

0

Water Independent Pathways (Inhalation excludes radon)

[illegible]

U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 25
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:36 Page 26
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESA.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.608E-08	0.000E+00	2.771E-09	1.533E-11	3.372E-11	3.890E-08
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	5.857E-16	0.9050	0.000E+00	0.0000	6.038E-17	0.0933	3.340E-19	0.0005	7.347E-19	0.0011	6.471E-16	1.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.857E-16	0.9050	0.000E+00	0.0000	6.038E-17	0.0933	3.340E-19	0.0005	7.347E-19	0.0011	6.471E-16	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location A Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	5.857E-16	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	6.038E-17	0.0933	3.340E-19	0.0005	7.347E-19	0.0011	6.471E-16	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	5.857E-16	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	6.038E-17	0.0933	3.340E-19	0.0005	7.347E-19	0.0011	6.471E-16	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 1
 Summary : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESB.RAD

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Dose Conversion Factor (and Related) Parameter Summary Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1(20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1(21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1(22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1(23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1(24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1(25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1(26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1(27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1(28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1(29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1(30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1(31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1(32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1(33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1(34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1(35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2(1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2(2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2(3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2(4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2(5)
B-1	U-234		3.479E-02	3.479E-02	DCF2(6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2(7)
B-1	U-238		2.973E-02	2.973E-02	DCF2(8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3(1)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3(2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3(3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3(4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3(5)
D-1	U-234	1.831E-04	1.831E-04	DCF3(6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3(7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC(8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport Post-Rem.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.500E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.500E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	9.000E-06	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	5.800E-07	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	7.900E-06	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.670E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.399E-03		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.056E-02		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.236E-05		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	7.000E-07	1.000E-04	---		MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---		ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	6.550E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	7.990E-02	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

0		User	Used by RESRAD	Parameter
Menu	Parameter	Input	(If different from user input)	Name

R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	4.490E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	7.000E-07	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | 8.000E-02 | 8.000E-02 | --- | TE(3)
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 9
 Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	25000.00 square meters	U-234	9.000E-06
Thickness:	0.15 meters	U-235	5.800E-07
Cover Depth:	0.00 meters	U-238	7.900E-06

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
 TDOSE(t): 1.161E-06 1.141E-06 1.102E-06 9.728E-07 6.767E-07 1.547E-07 0.000E+00 3.049E-10
 M(t): 4.646E-08 4.565E-08 4.406E-08 3.891E-08 2.707E-08 6.187E-09 0.000E+00 1.220E-11
 0Maximum TDOSE(t): 1.161E-06 mrem/yr at t = 0.000E+00 years
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 Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.646E-09	0.0014	7.638E-11	0.0001	0.000E+00	0.0000	5.916E-08	0.0509	1.848E-08	0.0159	4.708E-08	0.0405	5.381E-08	0.0463
U-235	2.143E-07	0.1845	4.432E-12	0.0000	0.000E+00	0.0000	3.624E-09	0.0031	1.133E-09	0.0010	2.883E-09	0.0025	3.295E-09	0.0028
U-238	6.040E-07	0.5201	5.734E-11	0.0000	0.000E+00	0.0000	5.034E-08	0.0433	1.572E-08	0.0135	4.007E-08	0.0345	4.579E-08	0.0394
Total	8.200E-07	0.7060	1.382E-10	0.0001	0.000E+00	0.0000	1.131E-07	0.0974	3.533E-08	0.0304	9.003E-08	0.0775	1.029E-07	0.0886

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.802E-07	0.1552
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.252E-07	0.1939
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.560E-07	0.6509
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.161E-06	1.0000

0*Sum of all water independent and dependent pathways.

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 Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.622E-09	0.0014	7.476E-11	0.0001	0.000E+00	0.0000	5.791E-08	0.0507	1.809E-08	0.0158	4.608E-08	0.0404	5.267E-08	0.0462
U-235	2.110E-07	0.1849	4.341E-12	0.0000	0.000E+00	0.0000	3.550E-09	0.0031	1.113E-09	0.0010	2.822E-09	0.0025	3.226E-09	0.0028

U-238	5.943E-07	0.5208	5.613E-11	0.0000	0.000E+00	0.0000	4.928E-08	0.0432	1.539E-08	0.0135	3.922E-08	0.0344	4.482E-08	0.0393
Total	8.069E-07	0.7071	1.352E-10	0.0001	0.000E+00	0.0000	1.107E-07	0.0970	3.459E-08	0.0303	8.812E-08	0.0772	1.007E-07	0.0883

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.764E-07	0.1546
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.217E-07	0.1943
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.431E-07	0.6511
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.141E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.575E-09	0.0014	7.162E-11	0.0001	0.000E+00	0.0000	5.547E-08	0.0503	1.733E-08	0.0157	4.414E-08	0.0401	5.045E-08	0.0458
U-235	2.045E-07	0.1856	4.163E-12	0.0000	0.000E+00	0.0000	3.407E-09	0.0031	1.074E-09	0.0010	2.703E-09	0.0025	3.091E-09	0.0028
U-238	5.753E-07	0.5222	5.376E-11	0.0000	0.000E+00	0.0000	4.720E-08	0.0428	1.474E-08	0.0134	3.756E-08	0.0341	4.293E-08	0.0390
Total	7.814E-07	0.7093	1.295E-10	0.0001	0.000E+00	0.0000	1.061E-07	0.0963	3.314E-08	0.0301	8.440E-08	0.0766	9.648E-08	0.0876

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.690E-07	0.1534
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.148E-07	0.1950
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.178E-07	0.6516
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.102E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.284E-08	0.1372
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.388E-07	0.2051
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.450E-07	0.6577
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.767E-07	1.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.828E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	2.172E-11	0.0712	1.202E-13	0.0004	2.643E-13	0.0009	3.049E-10	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.828E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	2.172E-11	0.0712	1.202E-13	0.0004	2.643E-13	0.0009	3.049E-10	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	2.003E-02	1.960E-02	1.878E-02	1.613E-02	1.030E-02	1.535E-03	0.000E+00	0.000E+00
	U-234	Th-230	1.000E+00	1.949E-07	5.628E-07	1.265E-06	3.422E-06	7.405E-06	6.640E-06	0.000E+00	0.000E+00
	U-234	Ra-226+D	1.000E+00	3.491E-09	2.442E-08	1.268E-07	1.049E-06	6.980E-06	2.691E-05	0.000E+00	0.000E+00
	U-234	Pb-210+D	1.000E+00	1.045E-11	1.377E-10	1.432E-09	3.099E-08	4.708E-07	2.654E-06	0.000E+00	0.000E+00
	U-234	ΣDSR(j)		2.003E-02	1.960E-02	1.878E-02	1.614E-02	1.032E-02	1.572E-03	0.000E+00	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	3.883E-01	3.822E-01	3.703E-01	3.311E-01	2.390E-01	6.127E-02	0.000E+00	0.000E+00
	U-235+D	Pa-231	1.000E+00	7.167E-06	2.208E-05	5.023E-05	1.310E-04	2.468E-04	1.302E-04	0.000E+00	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	1.306E-07	8.636E-07	4.215E-06	2.964E-05	1.315E-04	1.665E-04	0.000E+00	5.257E-04
	U-235+D	ΣDSR(j)		3.883E-01	3.822E-01	3.703E-01	3.313E-01	2.393E-01	6.157E-02	0.000E+00	5.257E-04
0U	U-238	U-238	5.450E-07	9.792E-09	9.585E-09	9.181E-09	7.886E-09	5.031E-09	7.455E-10	0.000E+00	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00
	U-238+D	U-234	1.000E+00	2.817E-08	8.293E-08	1.855E-07	4.782E-07	8.870E-07	4.357E-07	0.000E+00	0.000E+00
	U-238+D	Th-230	1.000E+00	1.878E-13	1.248E-12	6.281E-12	4.956E-11	2.952E-10	7.175E-10	0.000E+00	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	2.448E-15	3.670E-14	4.201E-13	1.021E-11	1.909E-10	2.154E-09	0.000E+00	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	6.116E-18	1.657E-16	3.684E-15	2.325E-13	1.019E-11	1.826E-10	0.000E+00	0.000E+00
	U-238+D	ΣDSR(j)		9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.248E+03	1.275E+03	1.331E+03	1.549E+03	2.424E+03	1.591E+04	*6.222E+09	*6.222E+09	
U-235	6.438E+01	6.541E+01	6.751E+01	7.546E+01	1.045E+02	4.061E+02	*2.160E+06	4.756E+04	
U-238	2.612E+02	2.658E+02	2.751E+02	3.108E+02	4.438E+02	1.884E+03	*3.361E+05	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	9.000E-06	0.000E+00	2.003E-02	1.248E+03	2.003E-02	1.248E+03
U-235	5.800E-07	0.000E+00	3.883E-01	6.438E+01	3.883E-01	6.438E+01
U-238	7.900E-06	0.000E+00	9.570E-02	2.612E+02	9.570E-02	2.612E+02

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Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		1.802E-07	1.764E-07	1.690E-07	1.452E-07	9.271E-08	1.382E-08	0.000E+00 0.000E+00
U-234	U-238	1.000E+00		2.226E-13	6.551E-13	1.465E-12	3.778E-12	7.007E-12	3.442E-12	0.000E+00 0.000E+00
U-234	ΣDOSE(j)			1.802E-07	1.764E-07	1.690E-07	1.452E-07	9.271E-08	1.382E-08	0.000E+00 0.000E+00
0Th-230	U-234	1.000E+00		1.754E-12	5.065E-12	1.139E-11	3.080E-11	6.664E-11	5.976E-11	0.000E+00 0.000E+00
Th-230	U-238	1.000E+00		1.484E-18	9.863E-18	4.962E-17	3.915E-16	2.332E-15	5.669E-15	0.000E+00 0.000E+00
Th-230	ΣDOSE(j)			1.754E-12	5.065E-12	1.139E-11	3.080E-11	6.664E-11	5.976E-11	0.000E+00 0.000E+00
0Ra-226	U-234	1.000E+00		3.142E-14	2.198E-13	1.141E-12	9.439E-12	6.282E-11	2.422E-10	0.000E+00 0.000E+00
Ra-226	U-238	1.000E+00		1.934E-20	2.900E-19	3.319E-18	8.062E-17	1.508E-15	1.701E-14	0.000E+00 0.000E+00
Ra-226	ΣDOSE(j)			3.142E-14	2.198E-13	1.141E-12	9.439E-12	6.282E-11	2.422E-10	0.000E+00 0.000E+00
0Pb-210	U-234	1.000E+00		9.402E-17	1.239E-15	1.289E-14	2.789E-13	4.237E-12	2.389E-11	0.000E+00 0.000E+00
Pb-210	U-238	1.000E+00		4.832E-23	1.309E-21	2.910E-20	1.837E-18	8.050E-17	1.443E-15	0.000E+00 0.000E+00
Pb-210	ΣDOSE(j)			9.402E-17	1.239E-15	1.289E-14	2.789E-13	4.237E-12	2.389E-11	0.000E+00 0.000E+00
0U-235	U-235	1.000E+00		2.252E-07	2.217E-07	2.148E-07	1.921E-07	1.386E-07	3.554E-08	0.000E+00 0.000E+00
0Pa-231	U-235	1.000E+00		4.157E-12	1.281E-11	2.913E-11	7.600E-11	1.431E-10	7.551E-11	0.000E+00 0.000E+00
0Ac-227	U-235	1.000E+00		7.573E-14	5.009E-13	2.445E-12	1.719E-11	7.626E-11	9.656E-11	0.000E+00 3.049E-10
0U-238	U-238	5.450E-07		7.736E-14	7.572E-14	7.253E-14	6.230E-14	3.975E-14	5.890E-15	0.000E+00 0.000E+00
U-238	U-238	1.000E+00		7.560E-07	7.431E-07	7.178E-07	6.354E-07	4.450E-07	1.048E-07	0.000E+00 0.000E+00
U-238	ΣDOSE(j)			7.560E-07	7.431E-07	7.178E-07	6.354E-07	4.450E-07	1.048E-07	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESB.RAD

Individual Nuclide Soil Concentration Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		9.000E-06	8.868E-06	8.610E-06	7.764E-06	5.778E-06	2.055E-06	1.071E-07 3.461E-12
U-234	U-238	1.000E+00		0.000E+00	2.198E-11	6.401E-11	1.924E-10	4.296E-10	5.093E-10	7.965E-11 8.589E-15
U-234	ΣS(j):			9.000E-06	8.868E-06	8.610E-06	7.764E-06	5.779E-06	2.055E-06	1.072E-07 3.470E-12
0Th-230	U-234	1.000E+00		0.000E+00	8.215E-11	2.428E-10	7.693E-10	2.005E-09	4.318E-09	5.508E-09 5.491E-09
Th-230	U-238	1.000E+00		0.000E+00	1.015E-16	8.961E-16	9.298E-15	6.906E-14	4.081E-13	8.760E-13 9.228E-13
Th-230	ΣS(j):			0.000E+00	8.215E-11	2.428E-10	7.693E-10	2.005E-09	4.318E-09	5.509E-09 5.492E-09
0Ra-226	U-234	1.000E+00		0.000E+00	1.777E-14	1.572E-13	1.646E-12	1.252E-11	7.984E-11	1.958E-10 2.168E-10
Ra-226	U-238	1.000E+00		0.000E+00	1.466E-20	3.879E-19	1.339E-17	2.960E-16	5.585E-15	2.802E-14 3.643E-14
Ra-226	ΣS(j):			0.000E+00	1.777E-14	1.572E-13	1.646E-12	1.252E-11	7.985E-11	1.958E-10 2.168E-10
0Pb-210	U-234	1.000E+00		0.000E+00	1.836E-16	4.801E-15	1.591E-13	3.162E-12	4.459E-11	1.519E-10 1.754E-10
Pb-210	U-238	1.000E+00		0.000E+00	1.138E-22	8.930E-21	9.880E-19	5.890E-17	2.678E-15	2.089E-14 2.946E-14
Pb-210	ΣS(j):			0.000E+00	1.836E-16	4.801E-15	1.591E-13	3.162E-12	4.459E-11	1.520E-10 1.754E-10
0U-235	U-235	1.000E+00		5.800E-07	5.715E-07	5.549E-07	5.004E-07	3.724E-07	1.324E-07	6.907E-09 2.237E-13
0Pa-231	U-235	1.000E+00		0.000E+00	1.209E-11	3.522E-11	1.059E-10	2.363E-10	2.799E-10	4.370E-11 4.683E-15

0Ac-227	U-235	1.000E+00	0.000E+00	1.891E-13	1.595E-12	1.420E-11	7.047E-11	1.351E-10	2.427E-11	2.721E-15
0U-238	U-238	5.450E-07	4.305E-12	4.242E-12	4.119E-12	3.714E-12	2.764E-12	9.832E-13	5.127E-14	1.660E-18
U-238	U-238	1.000E+00	7.900E-06	7.784E-06	7.558E-06	6.815E-06	5.072E-06	1.804E-06	9.408E-08	3.047E-12
U-238	ΣS(j):		7.900E-06	7.784E-06	7.558E-06	6.815E-06	5.072E-06	1.804E-06	9.408E-08	3.047E-12

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 9.34 seconds

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Part III: Intake Quantities and Health Risk Factors

Cancer Risk Slope Factors	2
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Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	5
Time= 1.000E+00	8
Time= 3.000E+00	11
Time= 1.000E+01	14
Time= 3.000E+01	17
Time= 1.000E+02	20
Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport Post-Rem.

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Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 4

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESB.RAD

Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	5.195E-01	5.192E-01	5.188E-01	5.169E-01	5.090E-01	4.061E-01	0.000E+00	0.000E+00
At-218	2.740E-11	5.070E-01	5.066E-01	5.059E-01	5.032E-01	4.932E-01	4.126E-01	0.000E+00	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	5.169E-01	5.167E-01	5.163E-01	5.145E-01	5.075E-01	4.337E-01	0.000E+00	0.000E+00
Bi-211	1.900E-07	4.875E-01	4.869E-01	4.855E-01	4.805E-01	4.622E-01	3.177E-01	0.000E+00	0.000E+00
Bi-214	7.340E-06	4.352E-01	4.342E-01	4.322E-01	4.248E-01	4.003E-01	2.579E-01	0.000E+00	0.000E+00
Bi-215	1.080E-06	4.749E-01	4.741E-01	4.726E-01	4.667E-01	4.462E-01	2.988E-01	0.000E+00	0.000E+00
Fr-223	1.350E-07	5.060E-01	5.056E-01	5.047E-01	5.013E-01	4.882E-01	3.630E-01	0.000E+00	0.000E+00
Hg-206	4.830E-07	4.908E-01	4.902E-01	4.889E-01	4.842E-01	4.667E-01	3.231E-01	0.000E+00	0.000E+00
Pa-231	1.270E-07	4.940E-01	4.934E-01	4.923E-01	4.878E-01	4.712E-01	3.299E-01	0.000E+00	0.000E+00
Pa-234	6.620E-06	4.590E-01	4.581E-01	4.563E-01	4.498E-01	4.273E-01	2.821E-01	0.000E+00	0.000E+00
Pa-234m	9.060E-08	4.683E-01	4.675E-01	4.659E-01	4.600E-01	4.398E-01	3.064E-01	0.000E+00	0.000E+00
Pb-210	1.480E-09	5.384E-01	5.384E-01	5.384E-01	5.384E-01	5.383E-01	5.262E-01	0.000E+00	0.000E+00
Pb-211	2.910E-07	4.702E-01	4.694E-01	4.678E-01	4.616E-01	4.402E-01	2.916E-01	0.000E+00	0.000E+00
Pb-214	9.940E-07	4.897E-01	4.891E-01	4.878E-01	4.830E-01	4.654E-01	3.219E-01	0.000E+00	0.000E+00
Po-210	4.510E-11	4.576E-01	4.568E-01	4.550E-01	4.483E-01	4.256E-01	2.802E-01	0.000E+00	0.000E+00
Po-211	3.760E-08	4.588E-01	4.579E-01	4.562E-01	4.496E-01	4.272E-01	2.818E-01	0.000E+00	0.000E+00
Po-214	3.850E-10	4.594E-01	4.585E-01	4.568E-01	4.502E-01	4.277E-01	2.809E-01	0.000E+00	0.000E+00
Po-215	7.480E-10	4.807E-01	4.799E-01	4.785E-01	4.730E-01	4.533E-01	3.068E-01	0.000E+00	0.000E+00
Po-218	6.840E-15	5.225E-01	5.225E-01	5.225E-01	5.224E-01	5.208E-01	4.607E-01	0.000E+00	0.000E+00
Ra-223	4.550E-07	5.029E-01	5.024E-01	5.015E-01	4.979E-01	4.840E-01	3.519E-01	0.000E+00	0.000E+00
Ra-226	2.500E-08	5.061E-01	5.057E-01	5.049E-01	5.015E-01	4.886E-01	3.569E-01	0.000E+00	0.000E+00
Rn-218	3.390E-09	4.681E-01	4.673E-01	4.656E-01	4.594E-01	4.380E-01	2.907E-01	0.000E+00	0.000E+00
Rn-219	2.350E-07	4.899E-01	4.893E-01	4.880E-01	4.832E-01	4.656E-01	3.219E-01	0.000E+00	0.000E+00
Rn-222	1.690E-09	4.770E-01	4.762E-01	4.747E-01	4.689E-01	4.485E-01	3.005E-01	0.000E+00	0.000E+00
Th-227	4.450E-07	4.983E-01	4.978E-01	4.967E-01	4.926E-01	4.773E-01	3.392E-01	0.000E+00	0.000E+00
Th-230	8.450E-10	5.202E-01	5.200E-01	5.197E-01	5.185E-01	5.126E-01	4.175E-01	0.000E+00	0.000E+00
Th-231	2.490E-08	5.332E-01	5.330E-01	5.327E-01	5.314E-01	5.256E-01	4.330E-01	0.000E+00	0.000E+00
Th-234	1.780E-08	5.204E-01	5.203E-01	5.202E-01	5.196E-01	5.160E-01	4.335E-01	0.000E+00	0.000E+00
Tl-206	6.110E-09	5.148E-01	5.145E-01	5.140E-01	5.120E-01	5.045E-01	4.319E-01	0.000E+00	0.000E+00
Tl-207	1.590E-08	4.838E-01	4.832E-01	4.819E-01	4.771E-01	4.602E-01	3.407E-01	0.000E+00	0.000E+00
Tl-210	1.340E-05	4.400E-01	4.391E-01	4.371E-01	4.299E-01	4.058E-01	2.634E-01	0.000E+00	0.000E+00
U-234	2.530E-10	5.332E-01	5.331E-01	5.328E-01	5.316E-01	5.263E-01	4.454E-01	0.000E+00	0.000E+00
U-235	5.510E-07	5.068E-01	5.064E-01	5.055E-01	5.023E-01	4.896E-01	3.587E-01	0.000E+00	0.000E+00
U-238	1.240E-10	5.147E-01	5.143E-01	5.136E-01	5.107E-01	5.001E-01	4.030E-01	0.000E+00	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	2.219E-09	3.263E-04	1.019E-04	2.598E-04	2.970E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.849E-04
U-235	1.430E-10	2.103E-05	6.564E-06	1.674E-05	1.914E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.347E-05
U-238	1.948E-09	2.864E-04	8.940E-05	2.280E-04	2.607E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.645E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.924E-16	0.0000	2.906E-20	0.0000	1.335E-17	0.0000	8.674E-19	0.0000	3.487E-19	0.0000	1.193E-17	0.0000
Pa-231	1.976E-16	0.0000	5.381E-20	0.0000	9.359E-17	0.0000	1.244E-16	0.0000	1.799E-19	0.0000	2.133E-17	0.0000
Pb-210	3.441E-20	0.0000	1.011E-22	0.0000	6.773E-18	0.0000	1.448E-18	0.0000	7.573E-19	0.0000	1.511E-18	0.0000
Ra-226	3.140E-16	0.0000	5.401E-22	0.0000	2.310E-17	0.0000	2.374E-18	0.0000	3.170E-18	0.0000	1.319E-18	0.0000
Th-230	1.079E-17	0.0000	1.839E-19	0.0000	3.797E-17	0.0000	8.489E-18	0.0000	6.254E-19	0.0000	8.605E-17	0.0000
U-234	2.610E-14	0.0015	1.225E-15	0.0001	6.183E-13	0.0360	1.931E-13	0.0112	4.920E-13	0.0286	5.623E-13	0.0327
U-235	3.621E-12	0.2108	7.095E-17	0.0000	4.072E-14	0.0024	1.272E-14	0.0007	3.241E-14	0.0019	3.704E-14	0.0022
U-238	9.468E-12	0.5513	9.146E-16	0.0001	6.851E-13	0.0399	2.140E-13	0.0125	5.452E-13	0.0317	6.232E-13	0.0363

Total 1.312E-11 0.7637 2.211E-15 0.0001 1.344E-12 0.0783 4.200E-13 0.0245 1.070E-12 0.0623 1.223E-12 0.0712
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 6
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.190E-16	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.371E-16	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.052E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.440E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.441E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.893E-12	0.1102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.744E-12	0.2180
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.154E-11	0.6717
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.718E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.643E-14	0.0015	1.225E-15	0.0001	0.000E+00	0.0000	6.183E-13	0.0360	1.931E-13	0.0112	4.920E-13	0.0286	5.624E-13	0.0327

U-235	3.622E-12	0.2109	7.104E-17	0.0000	0.000E+00	0.0000	4.083E-14	0.0024	1.284E-14	0.0007	3.241E-14	0.0019	3.707E-14	0.0022
U-238	9.468E-12	0.5513	9.147E-16	0.0001	0.000E+00	0.0000	6.852E-13	0.0399	2.140E-13	0.0125	5.453E-13	0.0317	6.232E-13	0.0363
Total	1.312E-11	0.7637	2.211E-15	0.0001	0.000E+00	0.0000	1.344E-12	0.0783	4.200E-13	0.0245	1.070E-12	0.0623	1.223E-12	0.0712

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 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.893E-12	0.1102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.745E-12	0.2180
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.154E-11	0.6717
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.718E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 8
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	4.631E-17	8.239E-12	3.880E-12	1.853E-13	6.197E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.850E-11
Pa-231	2.961E-15	1.697E-09	2.165E-09	4.164E-12	3.963E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.262E-09
Pb-210	4.496E-20	3.425E-14	6.954E-15	3.440E-15	6.018E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.066E-14
Ra-226	4.353E-18	9.553E-12	8.485E-13	1.267E-12	5.825E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.225E-11
Th-230	2.012E-14	1.246E-09	3.000E-10	2.553E-11	2.693E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.264E-09
U-234	2.172E-09	3.196E-04	9.982E-05	2.543E-04	2.907E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.644E-04
U-235	1.400E-10	2.059E-05	6.433E-06	1.639E-05	1.873E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.215E-05
U-238	1.906E-09	2.805E-04	8.762E-05	2.232E-04	2.551E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.465E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio-Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	5.392E-16	0.0000	3.169E-20	0.0000	1.455E-17	0.0000	9.276E-19	0.0000	3.802E-19	0.0000	1.300E-17	0.0000
Pa-231	2.104E-16	0.0000	5.709E-20	0.0000	9.931E-17	0.0000	1.320E-19	0.0000	1.907E-19	0.0000	2.263E-17	0.0000
Pb-210	3.953E-20	0.0000	1.155E-22	0.0000	7.731E-18	0.0000	1.652E-18	0.0000	8.646E-19	0.0000	1.726E-18	0.0000
Ra-226	3.487E-16	0.0000	5.977E-22	0.0000	2.557E-17	0.0000	2.628E-18	0.0000	3.508E-18	0.0000	1.460E-18	0.0000
Th-230	1.156E-17	0.0000	1.961E-19	0.0000	4.048E-17	0.0000	9.049E-18	0.0000	6.665E-19	0.0000	9.176E-17	0.0000
U-234	2.571E-14	0.0015	1.198E-15	0.0001	6.048E-13	0.0358	1.889E-13	0.0112	4.813E-13	0.0285	5.501E-13	0.0326
U-235	3.564E-12	0.2112	6.941E-17	0.0000	3.984E-14	0.0024	1.244E-14	0.0007	3.170E-14	0.0019	3.623E-14	0.0021
U-238	9.313E-12	0.5519	8.947E-16	0.0001	6.702E-13	0.0397	2.094E-13	0.0124	5.334E-13	0.0316	6.096E-13	0.0361
Total	1.290E-11	0.7647	2.162E-15	0.0001	1.315E-12	0.0779	4.109E-13	0.0243	1.046E-12	0.0620	1.196E-12	0.0709

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 9

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.680E-16	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.646E-16	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.819E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.537E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.852E-12	0.1097
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.685E-12	0.2183
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.134E-11	0.6718
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.688E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.607E-14	0.0015	1.198E-15	0.0001	0.000E+00	0.0000	6.048E-13	0.0358	1.889E-13	0.0112	4.813E-13	0.0285	5.502E-13	0.0326
U-235	3.565E-12	0.2113	6.950E-17	0.0000	0.000E+00	0.0000	3.995E-14	0.0024	1.258E-14	0.0007	3.170E-14	0.0019	3.627E-14	0.0021
U-238	9.313E-12	0.5519	8.947E-16	0.0001	0.000E+00	0.0000	6.702E-13	0.0397	2.094E-13	0.0124	5.334E-13	0.0316	6.096E-13	0.0361
Total	1.290E-11	0.7647	2.162E-15	0.0001	0.000E+00	0.0000	1.315E-12	0.0779	4.109E-13	0.0243	1.046E-12	0.0620	1.196E-12	0.0709

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 10

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.852E-12	0.1098
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.686E-12	0.2184
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.134E-11	0.6718
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.688E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 11

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.854E-16	6.094E-11	1.238E-11	1.519E-12	5.158E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.264E-10
Pa-231	8.510E-15	4.964E-09	6.527E-09	1.025E-11	1.139E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.264E-08
Pb-210	1.160E-18	7.546E-13	1.612E-13	8.173E-14	1.552E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.153E-12
Ra-226	3.799E-17	8.737E-11	8.614E-12	1.187E-11	5.085E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.129E-10
Th-230	5.868E-14	3.512E-09	8.024E-10	6.189E-11	7.853E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.223E-08
U-234	2.080E-09	3.061E-04	9.562E-05	2.436E-04	2.784E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.237E-04
U-235	1.341E-10	1.973E-05	6.162E-06	1.570E-05	1.794E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.953E-05
U-238	1.826E-09	2.687E-04	8.393E-05	2.138E-04	2.444E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.108E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	6.378E-16	0.0000	3.718E-20	0.0000	1.706E-17	0.0000	1.044E-18	0.0000	4.460E-19	0.0000	1.526E-17	0.0000
Pa-231	2.348E-16	0.0000	6.315E-20	0.0000	1.099E-16	0.0000	1.461E-16	0.0000	2.104E-19	0.0000	2.503E-17	0.0000
Pb-210	5.129E-20	0.0000	1.482E-22	0.0000	9.907E-18	0.0000	2.117E-18	0.0000	1.108E-18	0.0000	2.214E-18	0.0000
Ra-226	4.244E-16	0.0000	7.222E-22	0.0000	3.091E-17	0.0000	3.179E-18	0.0000	4.241E-18	0.0000	1.764E-18	0.0000
Th-230	1.306E-17	0.0000	2.193E-19	0.0000	4.525E-17	0.0000	1.011E-17	0.0000	7.429E-19	0.0000	1.026E-16	0.0000
U-234	2.494E-14	0.0015	1.146E-15	0.0001	5.786E-13	0.0355	1.807E-13	0.0111	4.604E-13	0.0283	5.263E-13	0.0323
U-235	3.453E-12	0.2120	6.640E-17	0.0000	3.811E-14	0.0023	1.190E-14	0.0007	3.033E-14	0.0019	3.466E-14	0.0021
U-238	9.010E-12	0.5532	8.560E-16	0.0001	6.412E-13	0.0394	2.003E-13	0.0123	5.103E-13	0.0313	5.832E-13	0.0358

Total 1.249E-11 0.7668 2.069E-15 0.0001 1.258E-12 0.0772 3.931E-13 0.0241 1.001E-12 0.0615 1.144E-12 0.0703
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 12
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.716E-16	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.161E-16	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.540E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.645E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.720E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.772E-12	0.1088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.568E-12	0.2191
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.095E-11	0.6720
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.629E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.538E-14	0.0016	1.146E-15	0.0001	0.000E+00	0.0000	5.787E-13	0.0355	1.807E-13	0.0111	4.604E-13	0.0283	5.264E-13	0.0323

U-235	3.454E-12	0.2121	6.650E-17	0.0000	0.000E+00	0.0000	3.824E-14	0.0023	1.205E-14	0.0007	3.033E-14	0.0019	3.470E-14	0.0021
U-238	9.010E-12	0.5532	8.560E-16	0.0001	0.000E+00	0.0000	6.412E-13	0.0394	2.003E-13	0.0123	5.103E-13	0.0313	5.832E-13	0.0358
Total	1.249E-11	0.7668	2.069E-15	0.0001	0.000E+00	0.0000	1.258E-12	0.0772	3.931E-13	0.0241	1.001E-12	0.0615	1.144E-12	0.0703

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 13
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.773E-12	0.1088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.569E-12	0.2191
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.095E-11	0.6720
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.629E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 14
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.267E-15	4.932E-10	4.184E-11	1.280E-11	4.372E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.850E-10
Pa-231	2.436E-14	1.430E-08	1.899E-08	2.764E-11	3.260E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.658E-08
Pb-210	3.662E-17	2.228E-11	4.767E-12	2.478E-12	4.901E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.443E-11
Ra-226	3.787E-16	8.853E-10	9.042E-11	1.213E-10	5.069E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.148E-09
Th-230	1.770E-13	1.047E-08	2.344E-09	1.735E-10	2.369E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.668E-08
U-234	1.787E-09	2.629E-04	8.212E-05	2.092E-04	2.391E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.934E-04
U-235	1.151E-10	1.694E-05	5.292E-06	1.348E-05	1.541E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.113E-05
U-238	1.568E-09	2.308E-04	7.208E-05	1.836E-04	2.099E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.964E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

[illegible]

0

0

0

Radio- Nuclide												
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.007E-15	0.0001	5.685E-20	0.0000	2.601E-17	0.0000	1.400E-18	0.0000	6.817E-19	0.0000	2.333E-17	0.0000
Pa-231	3.061E-16	0.0000	7.952E-20	0.0000	1.384E-16	0.0000	1.843E-16	0.0000	2.634E-19	0.0000	3.152E-17	0.0000
Pb-210	1.109E-19	0.0000	3.073E-22	0.0000	2.048E-17	0.0000	4.377E-18	0.0000	2.294E-18	0.0000	4.592E-18	0.0000
Ra-226	7.463E-16	0.0001	1.236E-21	0.0000	5.292E-17	0.0000	5.453E-18	0.0000	7.266E-18	0.0000	3.017E-18	0.0000
Th-230	1.795E-17	0.0000	2.889E-19	0.0000	5.954E-17	0.0000	1.328E-17	0.0000	9.720E-19	0.0000	1.352E-16	0.0000
U-234	2.241E-14	0.0016	9.799E-16	0.0001	4.947E-13	0.0344	1.545E-13	0.0107	3.937E-13	0.0274	4.499E-13	0.0313
U-235	3.087E-12	0.2148	5.677E-17	0.0000	3.258E-14	0.0023	1.018E-14	0.0007	2.593E-14	0.0018	2.964E-14	0.0021
U-238	8.017E-12	0.5576	7.318E-16	0.0001	5.482E-13	0.0381	1.712E-13	0.0119	4.363E-13	0.0303	4.986E-13	0.0347
Total	1.113E-11	0.7741	1.769E-15	0.0001	1.076E-12	0.0748	3.362E-13	0.0234	8.559E-13	0.0595	9.784E-13	0.0681

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.059E-15	0.0001
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.607E-16	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.186E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.150E-16	0.0001
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.272E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.516E-12	0.1055
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.186E-12	0.2216
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.672E-12	0.6727
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.438E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.318E-14	0.0016	9.801E-16	0.0001	0.000E+00	0.0000	4.948E-13	0.0344	1.545E-13	0.0107	3.937E-13	0.0274	4.501E-13	0.0313
U-235	3.089E-12	0.2148	5.691E-17	0.0000	0.000E+00	0.0000	3.275E-14	0.0023	1.036E-14	0.0007	2.593E-14	0.0018	2.969E-14	0.0021
U-238	8.017E-12	0.5576	7.319E-16	0.0001	0.000E+00	0.0000	5.482E-13	0.0381	1.713E-13	0.0119	4.363E-13	0.0303	4.986E-13	0.0347
Total	1.113E-11	0.7741	1.769E-15	0.0001	0.000E+00	0.0000	1.076E-12	0.0748	3.362E-13	0.0234	8.559E-13	0.0595	9.784E-13	0.0681

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 16

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.517E-12	0.1055
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.188E-12	0.2217
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.672E-12	0.6728
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.438E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 17

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.390E-14	2.070E-09	1.011E-10	5.434E-11	1.860E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.086E-09
Pa-231	4.661E-14	2.741E-08	3.651E-08	5.195E-11	6.238E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.021E-08
Pb-210	6.236E-16	3.718E-10	7.943E-11	4.166E-11	8.347E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.764E-10
Ra-226	2.470E-15	5.800E-09	5.984E-10	7.966E-10	3.306E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.526E-09
Th-230	3.955E-13	2.330E-08	5.189E-09	3.791E-10	5.293E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.179E-08
U-234	1.140E-09	1.677E-04	5.239E-05	1.335E-04	1.525E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.061E-04
U-235	7.345E-11	1.081E-05	3.376E-06	8.601E-06	9.831E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.262E-05
U-238	1.000E-09	1.472E-04	4.599E-05	1.172E-04	1.339E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.443E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.903E-15	0.0002	9.587E-20	0.0000	4.370E-17	0.0000	1.914E-18	0.0000	1.149E-18	0.0000	3.934E-17	0.0000
Pa-231	4.146E-16	0.0000	9.566E-20	0.0000	1.667E-16	0.0000	2.221E-16	0.0000	3.150E-19	0.0000	3.792E-17	0.0000
Pb-210	4.570E-19	0.0000	1.097E-21	0.0000	7.277E-17	0.0000	1.554E-17	0.0000	8.165E-18	0.0000	1.639E-17	0.0000
Ra-226	1.962E-15	0.0002	2.957E-21	0.0000	1.268E-16	0.0000	1.310E-17	0.0000	1.742E-17	0.0000	7.221E-18	0.0000
Th-230	2.901E-17	0.0000	4.037E-19	0.0000	8.311E-17	0.0000	1.850E-17	0.0000	1.349E-18	0.0000	1.889E-16	0.0000
U-234	1.644E-14	0.0016	6.152E-16	0.0001	3.106E-13	0.0312	9.702E-14	0.0097	2.472E-13	0.0248	2.825E-13	0.0283
U-235	2.221E-12	0.2228	3.564E-17	0.0000	2.046E-14	0.0021	6.391E-15	0.0006	1.628E-14	0.0016	1.861E-14	0.0019
U-238	5.686E-12	0.5705	4.594E-16	0.0000	3.442E-13	0.0345	1.075E-13	0.0108	2.739E-13	0.0275	3.130E-13	0.0314

Total 7.928E-12 0.7954 1.111E-15 0.0001 6.757E-13 0.0678 2.112E-13 0.0212 5.374E-13 0.0539 6.144E-13 0.0616
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 18
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.989E-15	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.416E-16	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.133E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.127E-15	0.0002
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.212E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.543E-13	0.0957
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.283E-12	0.2290
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-12	0.6747
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.968E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.843E-14	0.0018	6.155E-16	0.0001	0.000E+00	0.0000	3.108E-13	0.0312	9.706E-14	0.0097	2.472E-13	0.0248	2.827E-13	0.0284

U-235	2.223E-12	0.2231	3.583E-17	0.0000	0.000E+00	0.0000	2.067E-14	0.0021	6.615E-15	0.0007	1.628E-14	0.0016	1.868E-14	0.0019
U-238	5.686E-12	0.5705	4.595E-16	0.0000	0.000E+00	0.0000	3.442E-13	0.0345	1.075E-13	0.0108	2.739E-13	0.0275	3.131E-13	0.0314
Total	7.928E-12	0.7954	1.111E-15	0.0001	0.000E+00	0.0000	6.757E-13	0.0678	2.112E-13	0.0212	5.374E-13	0.0539	6.144E-13	0.0616

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 19
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.568E-13	0.0960
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.286E-12	0.2293
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-12	0.6747
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.968E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 20
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESB.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.110E-14	1.647E-09	6.147E-11	4.338E-11	1.486E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.238E-09
Pa-231	2.301E-14	1.354E-08	1.806E-08	2.549E-11	3.079E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.471E-08
Pb-210	3.665E-15	2.170E-09	4.635E-10	2.438E-10	4.904E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.368E-09
Ra-226	6.562E-15	1.544E-08	1.600E-09	2.123E-09	8.782E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.004E-08
Th-230	3.549E-13	2.089E-08	4.645E-09	3.377E-10	4.750E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.337E-08
U-234	1.689E-10	2.486E-05	7.769E-06	1.978E-05	2.260E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.502E-05
U-235	1.088E-11	1.602E-06	5.007E-07	1.275E-06	1.457E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.835E-06
U-238	1.483E-10	2.183E-05	6.820E-06	1.736E-05	1.984E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.585E-05

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

Water-ind. == Water-independent Water-dep. == Water-dependent

0 Water Independent Pathways (Inhalation excludes radon)

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	8.953E-15	0.0043	7.698E-17	0.0000	0.000E+00	0.0000	3.916E-14	0.0189	1.218E-14	0.0059	3.088E-14	0.0149	3.540E-14	0.0171
U-235	5.085E-13	0.2451	4.523E-18	0.0000	0.000E+00	0.0000	2.629E-15	0.0013	8.727E-16	0.0004	2.032E-15	0.0010	2.352E-15	0.0011
U-238	1.302E-12	0.6275	5.735E-17	0.0000	0.000E+00	0.0000	4.298E-14	0.0207	1.343E-14	0.0065	3.419E-14	0.0165	3.907E-14	0.0188
Total	1.819E-12	0.8769	1.389E-16	0.0001	0.000E+00	0.0000	8.478E-14	0.0409	2.649E-14	0.0128	6.710E-14	0.0323	7.682E-14	0.0370

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 22

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.266E-13	0.0611
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.164E-13	0.2489
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.431E-12	0.6900
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.074E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 23

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

[illegible]

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+02 years
Radionuclides

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.00E+02 years

Water Independent Pathways (Inhalation excludes radon)

[illegible]

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of Radon and its Decay Products at t= 3.000E+02 years

0

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

[illegible]

U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 25
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 26
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.744E-07	0.000E+00	1.340E-08	7.411E-11	1.630E-10	1.880E-07
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 27

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	2.831E-15	0.9050	0.000E+00	0.0000	2.918E-16	0.0933	1.615E-18	0.0005	3.551E-18	0.0011	3.128E-15	1.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.831E-15	0.9050	0.000E+00	0.0000	2.918E-16	0.0933	1.615E-18	0.0005	3.551E-18	0.0011	3.128E-15	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 13:52 Page 28

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location B Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	2.831E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	2.918E-16	0.0933	1.615E-18	0.0005	3.551E-18	0.0011	3.128E-15	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	2.831E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	2.918E-16	0.0933	1.615E-18	0.0005	3.551E-18	0.0011	3.128E-15	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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 Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1(20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1(21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1(22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1(23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1(24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1(25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1(26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1(27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1(28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1(29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1(30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1(31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1(32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1(33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1(34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1(35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2(1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2(2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2(3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2(4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2(5)
B-1	U-234		3.479E-02	3.479E-02	DCF2(6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2(7)
B-1	U-238		2.973E-02	2.973E-02	DCF2(8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3(1)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3(2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3(3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3(4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3(5)
D-1	U-234	1.831E-04	1.831E-04	DCF3(6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3(7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

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Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC (2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC (2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC (3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC (3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC (4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC (4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC (5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC (5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC (6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC (7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC (8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC (9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport Post-Rem.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.500E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.600E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	2.200E-05	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	1.400E-06	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	2.000E-05	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.670E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.399E-03		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.056E-02		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.236E-05		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	7.000E-07	1.000E-04	---		MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---		ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	6.550E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	7.990E-02	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Site-Specific Parameter Summary (continued)

0		User	Used by RESRAD	Parameter
Menu	Parameter	Input	(If different from user input)	Name

R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	4.490E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	7.000E-07	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | 8.000E-02 | 8.000E-02 | --- | TE(3)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	25000.00 square meters	U-234	2.200E-05
Thickness:	0.15 meters	U-235	1.400E-06
Cover Depth:	0.00 meters	U-238	2.000E-05

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
 TDOSE(t): 2.898E-06 2.848E-06 2.749E-06 2.428E-06 1.689E-06 3.861E-07 0.000E+00 7.359E-10
 M(t): 1.159E-07 1.139E-07 1.100E-07 9.710E-08 6.755E-08 1.544E-08 0.000E+00 2.944E-11
 0Maximum TDOSE(t): 2.898E-06 mrem/yr at t = 0.000E+00 years
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 Summary : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.024E-09	0.0014	1.867E-10	0.0001	0.000E+00	0.0000	1.446E-07	0.0499	4.516E-08	0.0156	1.151E-07	0.0397	1.315E-07	0.0454
U-235	5.172E-07	0.1785	1.070E-11	0.0000	0.000E+00	0.0000	8.747E-09	0.0030	2.735E-09	0.0009	6.959E-09	0.0024	7.955E-09	0.0027
U-238	1.529E-06	0.5276	1.452E-10	0.0001	0.000E+00	0.0000	1.274E-07	0.0440	3.981E-08	0.0137	1.014E-07	0.0350	1.159E-07	0.0400
Total	2.050E-06	0.7075	3.426E-10	0.0001	0.000E+00	0.0000	2.808E-07	0.0969	8.771E-08	0.0303	2.235E-07	0.0771	2.554E-07	0.0881

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.406E-07	0.1520
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.436E-07	0.1876
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.914E-06	0.6604
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.898E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	3.964E-09	0.0014	1.828E-10	0.0001	0.000E+00	0.0000	1.415E-07	0.0497	4.421E-08	0.0155	1.126E-07	0.0396	1.288E-07	0.0452
U-235	5.093E-07	0.1788	1.048E-11	0.0000	0.000E+00	0.0000	8.570E-09	0.0030	2.687E-09	0.0009	6.811E-09	0.0024	7.787E-09	0.0027

U-238	1.505E-06	0.5284	1.421E-10	0.0000	0.000E+00	0.0000	1.248E-07	0.0438	3.897E-08	0.0137	9.928E-08	0.0349	1.135E-07	0.0398
Total	2.018E-06	0.7086	3.353E-10	0.0001	0.000E+00	0.0000	2.749E-07	0.0965	8.587E-08	0.0302	2.187E-07	0.0768	2.500E-07	0.0878

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.313E-07	0.1515
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.351E-07	0.1879
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.881E-06	0.6606
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.848E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	3.849E-09	0.0014	1.751E-10	0.0001	0.000E+00	0.0000	1.356E-07	0.0493	4.235E-08	0.0154	1.079E-07	0.0392	1.233E-07	0.0449
U-235	4.936E-07	0.1796	1.005E-11	0.0000	0.000E+00	0.0000	8.223E-09	0.0030	2.593E-09	0.0009	6.524E-09	0.0024	7.462E-09	0.0027
U-238	1.457E-06	0.5299	1.361E-10	0.0000	0.000E+00	0.0000	1.195E-07	0.0435	3.733E-08	0.0136	9.509E-08	0.0346	1.087E-07	0.0395
Total	1.954E-06	0.7108	3.212E-10	0.0001	0.000E+00	0.0000	2.633E-07	0.0958	8.227E-08	0.0299	2.095E-07	0.0762	2.395E-07	0.0871

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.132E-07	0.1503
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.185E-07	0.1886
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.817E-06	0.6611
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.749E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 15

Summary : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

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0*Sum of all water independent and dependent pathways.

Summary : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

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[illegible]

U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.269E-07	0.1344
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.351E-07	0.1984
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-06	0.6672
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.689E-06	1.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 19

Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	6.826E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	5.243E-11	0.0712	2.900E-13	0.0004	6.379E-13	0.0009	7.359E-10	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.826E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	5.243E-11	0.0712	2.900E-13	0.0004	6.379E-13	0.0009	7.359E-10	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 20

Summary : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	2.003E-02	1.960E-02	1.878E-02	1.613E-02	1.030E-02	1.535E-03	0.000E+00	0.000E+00
	U-234	Th-230	1.000E+00	1.949E-07	5.628E-07	1.265E-06	3.422E-06	7.405E-06	6.640E-06	0.000E+00	0.000E+00
	U-234	Ra-226+D	1.000E+00	3.491E-09	2.442E-08	1.268E-07	1.049E-06	6.980E-06	2.691E-05	0.000E+00	0.000E+00
	U-234	Pb-210+D	1.000E+00	1.045E-11	1.377E-10	1.432E-09	3.099E-08	4.708E-07	2.654E-06	0.000E+00	0.000E+00
	U-234	ΣDSR(j)		2.003E-02	1.960E-02	1.878E-02	1.614E-02	1.032E-02	1.572E-03	0.000E+00	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	3.883E-01	3.822E-01	3.703E-01	3.311E-01	2.390E-01	6.127E-02	0.000E+00	0.000E+00
	U-235+D	Pa-231	1.000E+00	7.167E-06	2.208E-05	5.023E-05	1.310E-04	2.468E-04	1.302E-04	0.000E+00	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	1.306E-07	8.636E-07	4.215E-06	2.964E-05	1.315E-04	1.665E-04	0.000E+00	5.257E-04
	U-235+D	ΣDSR(j)		3.883E-01	3.822E-01	3.703E-01	3.313E-01	2.393E-01	6.157E-02	0.000E+00	5.257E-04
0U	U-238	U-238	5.450E-07	9.792E-09	9.585E-09	9.181E-09	7.886E-09	5.031E-09	7.455E-10	0.000E+00	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00
	U-238+D	U-234	1.000E+00	2.817E-08	8.293E-08	1.855E-07	4.782E-07	8.870E-07	4.357E-07	0.000E+00	0.000E+00
	U-238+D	Th-230	1.000E+00	1.878E-13	1.248E-12	6.281E-12	4.956E-11	2.952E-10	7.175E-10	0.000E+00	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	2.448E-15	3.670E-14	4.201E-13	1.021E-11	1.909E-10	2.154E-09	0.000E+00	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	6.116E-18	1.657E-16	3.684E-15	2.325E-13	1.019E-11	1.826E-10	0.000E+00	0.000E+00
	U-238+D	ΣDSR(j)		9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.248E+03	1.275E+03	1.331E+03	1.549E+03	2.424E+03	1.591E+04	*6.222E+09	*6.222E+09	
U-235	6.438E+01	6.541E+01	6.751E+01	7.546E+01	1.045E+02	4.061E+02	*2.160E+06	4.756E+04	
U-238	2.612E+02	2.658E+02	2.751E+02	3.108E+02	4.438E+02	1.884E+03	*3.361E+05	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	2.200E-05	0.000E+00	2.003E-02	1.248E+03	2.003E-02	1.248E+03
U-235	1.400E-06	0.000E+00	3.883E-01	6.438E+01	3.883E-01	6.438E+01
U-238	2.000E-05	0.000E+00	9.570E-02	2.612E+02	9.570E-02	2.612E+02

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		4.406E-07	4.313E-07	4.131E-07	3.549E-07	2.266E-07	3.378E-08	0.000E+00 0.000E+00
U-234	U-238	1.000E+00		5.635E-13	1.659E-12	3.710E-12	9.564E-12	1.774E-11	8.714E-12	0.000E+00 0.000E+00
U-234	ΣDOSE(j)			4.406E-07	4.313E-07	4.131E-07	3.549E-07	2.266E-07	3.379E-08	0.000E+00 0.000E+00
0Th-230	U-234	1.000E+00		4.287E-12	1.238E-11	2.784E-11	7.528E-11	1.629E-10	1.461E-10	0.000E+00 0.000E+00
Th-230	U-238	1.000E+00		3.756E-18	2.497E-17	1.256E-16	9.912E-16	5.905E-15	1.435E-14	0.000E+00 0.000E+00
Th-230	ΣDOSE(j)			4.287E-12	1.238E-11	2.784E-11	7.528E-11	1.629E-10	1.461E-10	0.000E+00 0.000E+00
0Ra-226	U-234	1.000E+00		7.680E-14	5.372E-13	2.789E-12	2.307E-11	1.536E-10	5.921E-10	0.000E+00 0.000E+00
Ra-226	U-238	1.000E+00		4.895E-20	7.341E-19	8.401E-18	2.041E-16	3.818E-15	4.307E-14	0.000E+00 0.000E+00
Ra-226	ΣDOSE(j)			7.680E-14	5.372E-13	2.789E-12	2.307E-11	1.536E-10	5.922E-10	0.000E+00 0.000E+00
0Pb-210	U-234	1.000E+00		2.298E-16	3.029E-15	3.151E-14	6.818E-13	1.036E-11	5.839E-11	0.000E+00 0.000E+00
Pb-210	U-238	1.000E+00		1.223E-22	3.315E-21	7.368E-20	4.649E-18	2.038E-16	3.652E-15	0.000E+00 0.000E+00
Pb-210	ΣDOSE(j)			2.298E-16	3.029E-15	3.151E-14	6.818E-13	1.036E-11	5.839E-11	0.000E+00 0.000E+00
0U-235	U-235	1.000E+00		5.436E-07	5.351E-07	5.184E-07	4.636E-07	3.345E-07	8.578E-08	0.000E+00 0.000E+00
0Pa-231	U-235	1.000E+00		1.003E-11	3.091E-11	7.032E-11	1.834E-10	3.455E-10	1.823E-10	0.000E+00 0.000E+00
0Ac-227	U-235	1.000E+00		1.828E-13	1.209E-12	5.901E-12	4.149E-11	1.841E-10	2.331E-10	0.000E+00 7.359E-10
0U-238	U-238	5.450E-07		1.958E-13	1.917E-13	1.836E-13	1.577E-13	1.006E-13	1.491E-14	0.000E+00 0.000E+00
U-238	U-238	1.000E+00		1.914E-06	1.881E-06	1.817E-06	1.609E-06	1.127E-06	2.653E-07	0.000E+00 0.000E+00
U-238	ΣDOSE(j)			1.914E-06	1.881E-06	1.817E-06	1.609E-06	1.127E-06	2.653E-07	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 22

Summary : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Individual Nuclide Soil Concentration Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		2.200E-05	2.168E-05	2.105E-05	1.898E-05	1.412E-05	5.022E-06	2.618E-07 8.460E-12
U-234	U-238	1.000E+00		0.000E+00	5.564E-11	1.621E-10	4.871E-10	1.088E-09	1.289E-09	2.016E-10 2.175E-14
U-234	ΣS(j):			2.200E-05	2.168E-05	2.105E-05	1.898E-05	1.413E-05	5.024E-06	2.620E-07 8.482E-12
0Th-230	U-234	1.000E+00		0.000E+00	2.008E-10	5.936E-10	1.880E-09	4.901E-09	1.055E-08	1.346E-08 1.342E-08
Th-230	U-238	1.000E+00		0.000E+00	2.571E-16	2.269E-15	2.354E-14	1.748E-13	1.033E-12	2.218E-12 2.336E-12
Th-230	ΣS(j):			0.000E+00	2.008E-10	5.936E-10	1.880E-09	4.901E-09	1.056E-08	1.347E-08 1.343E-08
0Ra-226	U-234	1.000E+00		0.000E+00	4.344E-14	3.844E-13	4.023E-12	3.061E-11	1.952E-10	4.786E-10 5.299E-10
Ra-226	U-238	1.000E+00		0.000E+00	3.711E-20	9.820E-19	3.389E-17	7.493E-16	1.414E-14	7.093E-14 9.222E-14
Ra-226	ΣS(j):			0.000E+00	4.344E-14	3.844E-13	4.023E-12	3.061E-11	1.952E-10	4.787E-10 5.300E-10
0Pb-210	U-234	1.000E+00		0.000E+00	4.488E-16	1.173E-14	3.890E-13	7.729E-12	1.090E-10	3.714E-10 4.286E-10
Pb-210	U-238	1.000E+00		0.000E+00	2.881E-22	2.261E-20	2.501E-18	1.491E-16	6.781E-15	5.288E-14 7.459E-14
Pb-210	ΣS(j):			0.000E+00	4.488E-16	1.173E-14	3.890E-13	7.729E-12	1.090E-10	3.715E-10 4.287E-10
0U-235	U-235	1.000E+00		1.400E-06	1.379E-06	1.339E-06	1.208E-06	8.989E-07	3.197E-07	1.667E-08 5.399E-13
0Pa-231	U-235	1.000E+00		0.000E+00	2.919E-11	8.501E-11	2.555E-10	5.704E-10	6.757E-10	1.055E-10 1.130E-14

0Ac-227	U-235	1.000E+00	0.000E+00	4.564E-13	3.850E-12	3.427E-11	1.701E-10	3.261E-10	5.859E-11	6.569E-15
0U-238	U-238	5.450E-07	1.090E-11	1.074E-11	1.043E-11	9.403E-12	6.999E-12	2.489E-12	1.298E-13	4.203E-18
U-238	U-238	1.000E+00	2.000E-05	1.971E-05	1.913E-05	1.725E-05	1.284E-05	4.567E-06	2.382E-07	7.713E-12
U-238	ΣS(j):		2.000E-05	1.971E-05	1.913E-05	1.725E-05	1.284E-05	4.567E-06	2.382E-07	7.713E-12

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 9.24 seconds

Table of Contents

Part III: Intake Quantities and Health Risk Factors

Cancer Risk Slope Factors	2
Risk Slope and ETFG for the Ground Pathway	4
Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	5
Time= 1.000E+00	8
Time= 3.000E+00	11
Time= 1.000E+01	14
Time= 3.000E+01	17
Time= 1.000E+02	20
Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 3

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport Post-Rem.

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Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.

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Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	5.195E-01	5.192E-01	5.188E-01	5.169E-01	5.090E-01	4.061E-01	0.000E+00	0.000E+00
At-218	2.740E-11	5.070E-01	5.066E-01	5.059E-01	5.032E-01	4.932E-01	4.126E-01	0.000E+00	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	5.169E-01	5.167E-01	5.163E-01	5.145E-01	5.075E-01	4.337E-01	0.000E+00	0.000E+00
Bi-211	1.900E-07	4.875E-01	4.869E-01	4.855E-01	4.805E-01	4.622E-01	3.177E-01	0.000E+00	0.000E+00
Bi-214	7.340E-06	4.352E-01	4.342E-01	4.322E-01	4.248E-01	4.003E-01	2.579E-01	0.000E+00	0.000E+00
Bi-215	1.080E-06	4.749E-01	4.741E-01	4.726E-01	4.667E-01	4.462E-01	2.988E-01	0.000E+00	0.000E+00
Fr-223	1.350E-07	5.060E-01	5.056E-01	5.047E-01	5.013E-01	4.882E-01	3.630E-01	0.000E+00	0.000E+00
Hg-206	4.830E-07	4.908E-01	4.902E-01	4.889E-01	4.842E-01	4.667E-01	3.231E-01	0.000E+00	0.000E+00
Pa-231	1.270E-07	4.940E-01	4.934E-01	4.923E-01	4.878E-01	4.712E-01	3.299E-01	0.000E+00	0.000E+00
Pa-234	6.620E-06	4.590E-01	4.581E-01	4.563E-01	4.498E-01	4.273E-01	2.821E-01	0.000E+00	0.000E+00
Pa-234m	9.060E-08	4.683E-01	4.675E-01	4.659E-01	4.600E-01	4.398E-01	3.064E-01	0.000E+00	0.000E+00
Pb-210	1.480E-09	5.384E-01	5.384E-01	5.384E-01	5.384E-01	5.383E-01	5.262E-01	0.000E+00	0.000E+00
Pb-211	2.910E-07	4.702E-01	4.694E-01	4.678E-01	4.616E-01	4.402E-01	2.916E-01	0.000E+00	0.000E+00
Pb-214	9.940E-07	4.897E-01	4.891E-01	4.878E-01	4.830E-01	4.654E-01	3.219E-01	0.000E+00	0.000E+00
Po-210	4.510E-11	4.576E-01	4.568E-01	4.550E-01	4.483E-01	4.256E-01	2.802E-01	0.000E+00	0.000E+00
Po-211	3.760E-08	4.588E-01	4.579E-01	4.562E-01	4.496E-01	4.272E-01	2.818E-01	0.000E+00	0.000E+00
Po-214	3.850E-10	4.594E-01	4.585E-01	4.568E-01	4.502E-01	4.277E-01	2.809E-01	0.000E+00	0.000E+00
Po-215	7.480E-10	4.807E-01	4.799E-01	4.785E-01	4.730E-01	4.533E-01	3.068E-01	0.000E+00	0.000E+00
Po-218	6.840E-15	5.225E-01	5.225E-01	5.225E-01	5.224E-01	5.208E-01	4.607E-01	0.000E+00	0.000E+00
Ra-223	4.550E-07	5.029E-01	5.024E-01	5.015E-01	4.979E-01	4.840E-01	3.519E-01	0.000E+00	0.000E+00
Ra-226	2.500E-08	5.061E-01	5.057E-01	5.049E-01	5.015E-01	4.886E-01	3.569E-01	0.000E+00	0.000E+00
Rn-218	3.390E-09	4.681E-01	4.673E-01	4.656E-01	4.594E-01	4.380E-01	2.907E-01	0.000E+00	0.000E+00
Rn-219	2.350E-07	4.899E-01	4.893E-01	4.880E-01	4.832E-01	4.656E-01	3.219E-01	0.000E+00	0.000E+00
Rn-222	1.690E-09	4.770E-01	4.762E-01	4.747E-01	4.689E-01	4.485E-01	3.005E-01	0.000E+00	0.000E+00
Th-227	4.450E-07	4.983E-01	4.978E-01	4.967E-01	4.926E-01	4.773E-01	3.392E-01	0.000E+00	0.000E+00
Th-230	8.450E-10	5.202E-01	5.200E-01	5.197E-01	5.185E-01	5.126E-01	4.175E-01	0.000E+00	0.000E+00
Th-231	2.490E-08	5.332E-01	5.330E-01	5.327E-01	5.314E-01	5.256E-01	4.330E-01	0.000E+00	0.000E+00
Th-234	1.780E-08	5.204E-01	5.203E-01	5.202E-01	5.196E-01	5.160E-01	4.335E-01	0.000E+00	0.000E+00
Tl-206	6.110E-09	5.148E-01	5.145E-01	5.140E-01	5.120E-01	5.045E-01	4.319E-01	0.000E+00	0.000E+00
Tl-207	1.590E-08	4.838E-01	4.832E-01	4.819E-01	4.771E-01	4.602E-01	3.407E-01	0.000E+00	0.000E+00
Tl-210	1.340E-05	4.400E-01	4.391E-01	4.371E-01	4.299E-01	4.058E-01	2.634E-01	0.000E+00	0.000E+00
U-234	2.530E-10	5.332E-01	5.331E-01	5.328E-01	5.316E-01	5.263E-01	4.454E-01	0.000E+00	0.000E+00
U-235	5.510E-07	5.068E-01	5.064E-01	5.055E-01	5.023E-01	4.896E-01	3.587E-01	0.000E+00	0.000E+00
U-238	1.240E-10	5.147E-01	5.143E-01	5.136E-01	5.107E-01	5.001E-01	4.030E-01	0.000E+00	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	5.424E-09	7.975E-04	2.490E-04	6.350E-04	7.259E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.407E-03
U-235	3.452E-10	5.075E-05	1.584E-05	4.041E-05	4.620E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.532E-04
U-238	4.931E-09	7.250E-04	2.263E-04	5.773E-04	6.599E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.189E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.189E-15	0.0000	7.015E-20	0.0000	3.223E-17	0.0000	2.094E-18	0.0000	8.416E-19	0.0000	2.878E-17	0.0000
Pa-231	4.769E-16	0.0000	1.299E-19	0.0000	2.259E-16	0.0000	3.003E-16	0.0000	4.341E-19	0.0000	5.148E-17	0.0000
Pb-210	8.412E-20	0.0000	2.472E-22	0.0000	1.656E-17	0.0000	3.539E-18	0.0000	1.851E-18	0.0000	3.694E-18	0.0000
Ra-226	7.676E-16	0.0000	1.320E-21	0.0000	5.647E-17	0.0000	5.803E-18	0.0000	7.748E-18	0.0000	3.224E-18	0.0000
Th-230	2.637E-17	0.0000	4.496E-19	0.0000	9.281E-17	0.0000	2.075E-17	0.0000	1.529E-18	0.0000	2.103E-16	0.0000
U-234	6.380E-14	0.0015	2.994E-15	0.0001	1.511E-12	0.0352	4.721E-13	0.0110	1.203E-12	0.0281	1.375E-12	0.0321
U-235	8.741E-12	0.2039	1.713E-16	0.0000	9.829E-14	0.0023	3.070E-14	0.0007	7.822E-14	0.0018	8.941E-14	0.0021
U-238	2.397E-11	0.5591	2.316E-15	0.0001	1.735E-12	0.0405	5.418E-13	0.0126	1.380E-12	0.0322	1.578E-12	0.0368

Total 3.278E-11 0.7645 5.481E-15 0.0001 3.345E-12 0.0780 1.045E-12 0.0244 2.661E-12 0.0621 3.042E-12 0.0709
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 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.253E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.055E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.573E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.408E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.522E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.627E-12	0.1079
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.038E-12	0.2108
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.921E-11	0.6812
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.288E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.460E-14	0.0015	2.994E-15	0.0001	0.000E+00	0.0000	1.511E-12	0.0353	4.721E-13	0.0110	1.203E-12	0.0280	1.375E-12	0.0321

U-235	8.742E-12	0.2039	1.715E-16	0.0000	0.000E+00	0.0000	9.855E-14	0.0023	3.100E-14	0.0007	7.822E-14	0.0018	8.949E-14	0.0021
U-238	2.397E-11	0.5591	2.316E-15	0.0001	0.000E+00	0.0000	1.735E-12	0.0405	5.418E-13	0.0126	1.380E-12	0.0322	1.578E-12	0.0368
Total	3.278E-11	0.7645	5.481E-15	0.0001	0.000E+00	0.0000	3.345E-12	0.0780	1.045E-12	0.0244	2.661E-12	0.0621	3.042E-12	0.0709

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 7
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.629E-12	0.1080
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.040E-12	0.2108
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.921E-11	0.6812
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.288E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 8
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.118E-16	1.989E-11	9.366E-12	4.473E-13	1.496E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.466E-11
Pa-231	7.148E-15	4.095E-09	5.225E-09	1.005E-11	9.567E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.029E-08
Pb-210	1.099E-19	8.373E-14	1.700E-14	8.409E-15	1.471E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.238E-13
Ra-226	1.064E-17	2.335E-11	2.074E-12	3.098E-12	1.424E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.995E-11
Th-230	4.918E-14	3.046E-09	7.334E-10	6.240E-11	6.582E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.042E-08
U-234	5.309E-09	7.812E-04	2.440E-04	6.217E-04	7.105E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.357E-03
U-235	3.378E-10	4.971E-05	1.553E-05	3.956E-05	4.522E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.500E-04
U-238	4.826E-09	7.102E-04	2.218E-04	5.651E-04	6.459E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.143E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

Water-ind. == Water-independent Water-dep. == Water-dependent

0 Water Independent Pathways (Inhalation excludes radon)

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 9

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.372E-14	0.0015	2.929E-15	0.0001	0.000E+00	0.0000	1.479E-12	0.0351	4.618E-13	0.0110	1.176E-12	0.0279	1.345E-12	0.0319
U-235	8.605E-12	0.2043	1.677E-16	0.0000	0.000E+00	0.0000	9.643E-14	0.0023	3.036E-14	0.0007	7.652E-14	0.0018	8.754E-14	0.0021
U-238	2.358E-11	0.5597	2.265E-15	0.0001	0.000E+00	0.0000	1.697E-12	0.0403	5.300E-13	0.0126	1.350E-12	0.0321	1.543E-12	0.0366
Total	3.225E-11	0.7655	5.362E-15	0.0001	0.000E+00	0.0000	3.272E-12	0.0777	1.022E-12	0.0243	2.603E-12	0.0618	2.976E-12	0.0706

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 10

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.528E-12	0.1075
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.896E-12	0.2112
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.870E-11	0.6813
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.213E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 11

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	9.302E-16	1.471E-10	2.988E-11	3.666E-12	1.245E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.051E-10
Pa-231	2.054E-14	1.198E-08	1.575E-08	2.475E-11	2.749E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.051E-08
Pb-210	2.835E-18	1.845E-12	3.939E-13	1.998E-13	3.795E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.818E-12
Ra-226	9.287E-17	2.136E-10	2.106E-11	2.901E-11	1.243E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.761E-10
Th-230	1.434E-13	8.584E-09	1.962E-09	1.513E-10	1.920E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.989E-08
U-234	5.085E-09	7.483E-04	2.337E-04	5.955E-04	6.806E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.258E-03
U-235	3.236E-10	4.762E-05	1.487E-05	3.789E-05	4.331E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.437E-04
U-238	4.623E-09	6.802E-04	2.125E-04	5.413E-04	6.187E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.053E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.539E-15	0.0000	8.975E-20	0.0000	4.117E-17	0.0000	2.521E-18	0.0000	1.077E-18	0.0000	3.683E-17	0.0000
Pa-231	5.667E-16	0.0000	1.524E-19	0.0000	2.652E-16	0.0000	3.527E-16	0.0000	5.078E-19	0.0000	6.042E-17	0.0000
Pb-210	1.254E-19	0.0000	3.622E-22	0.0000	2.422E-17	0.0000	5.176E-18	0.0000	2.709E-18	0.0000	5.413E-18	0.0000
Ra-226	1.037E-15	0.0000	1.765E-21	0.0000	7.555E-17	0.0000	7.771E-18	0.0000	1.037E-17	0.0000	4.312E-18	0.0000
Th-230	3.192E-17	0.0000	5.362E-19	0.0000	1.106E-16	0.0000	2.471E-17	0.0000	1.816E-18	0.0000	2.509E-16	0.0000
U-234	6.096E-14	0.0015	2.802E-15	0.0001	1.414E-12	0.0348	4.418E-13	0.0109	1.126E-12	0.0277	1.286E-12	0.0316
U-235	8.335E-12	0.2050	1.603E-16	0.0000	9.199E-14	0.0023	2.873E-14	0.0007	7.321E-14	0.0018	8.367E-14	0.0021
U-238	2.281E-11	0.5610	2.167E-15	0.0001	1.623E-12	0.0399	5.071E-13	0.0125	1.292E-12	0.0318	1.476E-12	0.0363

Total 3.121E-11 0.7676 5.130E-15 0.0001 3.130E-12 0.0770 9.780E-13 0.0241 2.491E-12 0.0613 2.847E-12 0.0700
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 12
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.621E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.246E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.764E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.135E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.204E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.332E-12	0.1065
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.613E-12	0.2118
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.771E-11	0.6815
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.066E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.203E-14	0.0015	2.802E-15	0.0001	0.000E+00	0.0000	1.415E-12	0.0348	4.418E-13	0.0109	1.126E-12	0.0277	1.287E-12	0.0316

U-235	8.337E-12	0.2050	1.605E-16	0.0000	0.000E+00	0.0000	9.230E-14	0.0023	2.909E-14	0.0007	7.321E-14	0.0018	8.377E-14	0.0021
U-238	2.281E-11	0.5610	2.167E-15	0.0001	0.000E+00	0.0000	1.623E-12	0.0399	5.071E-13	0.0125	1.292E-12	0.0318	1.477E-12	0.0363
Total	3.121E-11	0.7676	5.130E-15	0.0001	0.000E+00	0.0000	3.130E-12	0.0770	9.780E-13	0.0241	2.491E-12	0.0613	2.847E-12	0.0700

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 13
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.333E-12	0.1066
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.616E-12	0.2119
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.771E-11	0.6815
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.066E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 14
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	7.886E-15	1.190E-09	1.010E-10	3.089E-11	1.055E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.378E-09
Pa-231	5.880E-14	3.452E-08	4.584E-08	6.671E-11	7.869E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.829E-08
Pb-210	8.951E-17	5.446E-11	1.165E-11	6.057E-12	1.198E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.416E-11
Ra-226	9.258E-16	2.164E-09	2.210E-10	2.964E-10	1.239E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.805E-09
Th-230	4.327E-13	2.558E-08	5.731E-09	4.240E-10	5.791E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.965E-08
U-234	4.367E-09	6.426E-04	2.007E-04	5.114E-04	5.845E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.939E-03
U-235	2.779E-10	4.090E-05	1.277E-05	3.254E-05	3.720E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.234E-04
U-238	3.970E-09	5.842E-04	1.825E-04	4.649E-04	5.314E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.763E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	2.431E-15	0.0001	1.372E-19	0.0000	6.278E-17	0.0000	3.379E-18	0.0000	1.646E-18	0.0000	5.631E-17	0.0000				
Pa-231	7.389E-16	0.0000	1.919E-19	0.0000	3.342E-16	0.0000	4.448E-16	0.0000	6.357E-19	0.0000	7.608E-17	0.0000				
Pb-210	2.711E-19	0.0000	7.511E-22	0.0000	5.007E-17	0.0000	1.070E-17	0.0000	5.608E-18	0.0000	1.123E-17	0.0000				
Ra-226	1.824E-15	0.0001	3.020E-21	0.0000	1.294E-16	0.0000	1.333E-17	0.0000	1.776E-17	0.0000	7.376E-18	0.0000				
Th-230	4.387E-17	0.0000	7.063E-19	0.0000	1.456E-16	0.0000	3.245E-17	0.0000	2.376E-18	0.0000	3.304E-16	0.0000				
U-234	5.479E-14	0.0015	2.395E-15	0.0001	1.209E-12	0.0337	3.777E-13	0.0105	9.623E-13	0.0268	1.100E-12	0.0306				
U-235	7.452E-12	0.2077	1.370E-16	0.0000	7.865E-14	0.0022	2.457E-14	0.0007	6.259E-14	0.0017	7.153E-14	0.0020				
U-238	2.030E-11	0.5655	1.853E-15	0.0001	1.388E-12	0.0387	4.335E-13	0.0121	1.104E-12	0.0308	1.262E-12	0.0352				
Total	2.781E-11	0.7748	4.386E-15	0.0001	2.677E-12	0.0746	8.363E-13	0.0233	2.129E-12	0.0593	2.434E-12	0.0678				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.556E-15	0.0001
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.595E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.788E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.992E-15	0.0001
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.554E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.706E-12	0.1033
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.690E-12	0.2143
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.449E-11	0.6823
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.589E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.665E-14	0.0016	2.396E-15	0.0001	0.000E+00	0.0000	1.210E-12	0.0337	3.778E-13	0.0105	9.623E-13	0.0268	1.100E-12	0.0307
U-235	7.456E-12	0.2077	1.374E-16	0.0000	0.000E+00	0.0000	7.905E-14	0.0022	2.502E-14	0.0007	6.259E-14	0.0017	7.167E-14	0.0020
U-238	2.030E-11	0.5655	1.853E-15	0.0001	0.000E+00	0.0000	1.388E-12	0.0387	4.336E-13	0.0121	1.105E-12	0.0308	1.262E-12	0.0352
Total	2.781E-11	0.7748	4.386E-15	0.0001	0.000E+00	0.0000	2.677E-12	0.0746	8.363E-13	0.0233	2.129E-12	0.0593	2.434E-12	0.0678

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 16

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.709E-12	0.1033
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.694E-12	0.2144
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.449E-11	0.6823
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.589E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 17

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.355E-14	4.997E-09	2.440E-10	1.312E-10	4.490E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.862E-09
Pa-231	1.125E-13	6.616E-08	8.812E-08	1.254E-10	1.506E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.695E-07
Pb-210	1.524E-15	9.088E-10	1.942E-10	1.018E-10	2.040E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.409E-09
Ra-226	6.038E-15	1.418E-08	1.463E-09	1.947E-09	8.080E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.840E-08
Th-230	9.667E-13	5.695E-08	1.268E-08	9.266E-10	1.294E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.999E-07
U-234	2.786E-09	4.100E-04	1.281E-04	3.262E-04	3.729E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.237E-03
U-235	1.773E-10	2.609E-05	8.150E-06	2.076E-05	2.373E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.873E-05
U-238	2.533E-09	3.727E-04	1.164E-04	2.966E-04	3.390E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.125E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.593E-15	0.0002	2.314E-19	0.0000	1.055E-16	0.0000	4.620E-18	0.0000	2.773E-18	0.0000	9.496E-17	0.0000
Pa-231	1.001E-15	0.0000	2.309E-19	0.0000	4.023E-16	0.0000	5.360E-16	0.0000	7.603E-19	0.0000	9.152E-17	0.0000
Pb-210	1.117E-18	0.0000	2.681E-21	0.0000	1.779E-16	0.0000	3.800E-17	0.0000	1.996E-17	0.0000	4.007E-17	0.0000
Ra-226	4.797E-15	0.0002	7.228E-21	0.0000	3.100E-16	0.0000	3.203E-17	0.0000	4.259E-17	0.0000	1.765E-17	0.0000
Th-230	7.091E-17	0.0000	9.869E-19	0.0000	2.032E-16	0.0000	4.521E-17	0.0000	3.296E-18	0.0000	4.617E-16	0.0000
U-234	4.018E-14	0.0016	1.504E-15	0.0001	7.592E-13	0.0305	2.372E-13	0.0095	6.041E-13	0.0243	6.905E-13	0.0278
U-235	5.361E-12	0.2155	8.603E-17	0.0000	4.938E-14	0.0020	1.543E-14	0.0006	3.929E-14	0.0016	4.491E-14	0.0018
U-238	1.440E-11	0.5785	1.163E-15	0.0000	8.714E-13	0.0350	2.722E-13	0.0109	6.934E-13	0.0279	7.925E-13	0.0319

Total 1.981E-11 0.7960 2.754E-15 0.0001 1.681E-12 0.0676 5.255E-13 0.0211 1.337E-12 0.0537 1.529E-12 0.0614
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 18
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.801E-15	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.032E-15	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.770E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.199E-15	0.0002
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.853E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.333E-12	0.0938
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.510E-12	0.2215
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-11	0.6843
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.488E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	4.505E-14	0.0018	1.505E-15	0.0001	0.000E+00	0.0000	7.598E-13	0.0305	2.373E-13	0.0095	6.042E-13	0.0243	6.909E-13	0.0278

U-235	5.367E-12	0.2157	8.650E-17	0.0000	0.000E+00	0.0000	4.989E-14	0.0020	1.597E-14	0.0006	3.930E-14	0.0016	4.510E-14	0.0018
U-238	1.440E-11	0.5785	1.163E-15	0.0000	0.000E+00	0.0000	8.715E-13	0.0350	2.722E-13	0.0109	6.935E-13	0.0279	7.926E-13	0.0319
Total	1.981E-11	0.7960	2.754E-15	0.0001	0.000E+00	0.0000	1.681E-12	0.0676	5.255E-13	0.0211	1.337E-12	0.0537	1.529E-12	0.0614

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 19
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.339E-12	0.0940
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.517E-12	0.2217
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-11	0.6843
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.488E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 20
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESC.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.680E-14	3.976E-09	1.484E-10	1.047E-10	3.586E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.815E-09
Pa-231	5.553E-14	3.269E-08	4.360E-08	6.152E-11	7.432E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.379E-08
Pb-210	8.958E-15	5.305E-09	1.133E-09	5.959E-10	1.199E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.232E-09
Ra-226	1.604E-14	3.775E-08	3.911E-09	5.190E-09	2.147E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.899E-08
Th-230	8.675E-13	5.107E-08	1.135E-08	8.254E-10	1.161E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.794E-07
U-234	4.129E-10	6.078E-05	1.899E-05	4.835E-05	5.526E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.834E-04
U-235	2.627E-11	3.868E-06	1.209E-06	3.077E-06	3.516E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.167E-05
U-238	3.753E-10	5.526E-05	1.727E-05	4.396E-05	5.023E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.667E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.628E-15	0.0007	1.055E-19	0.0000	4.801E-17	0.0000	1.773E-18	0.0000	1.265E-18	0.0000	4.331E-17	0.0000				
Pa-231	5.727E-16	0.0001	7.652E-20	0.0000	1.334E-16	0.0000	1.780E-16	0.0000	2.510E-19	0.0000	3.033E-17	0.0000				
Pb-210	6.432E-18	0.0000	6.372E-21	0.0000	4.213E-16	0.0001	9.002E-17	0.0000	4.733E-17	0.0000	9.523E-17	0.0000				
Ra-226	1.075E-14	0.0021	9.920E-21	0.0000	4.261E-16	0.0001	4.418E-17	0.0000	5.859E-17	0.0000	2.423E-17	0.0000				
Th-230	8.832E-17	0.0000	5.940E-19	0.0000	1.223E-16	0.0000	2.719E-17	0.0000	1.975E-18	0.0000	2.779E-16	0.0001				
U-234	1.104E-14	0.0021	1.876E-16	0.0000	9.479E-14	0.0183	2.962E-14	0.0057	7.539E-14	0.0146	8.616E-14	0.0166				
U-235	1.223E-12	0.2361	1.073E-17	0.0000	6.165E-15	0.0012	1.927E-15	0.0004	4.904E-15	0.0009	5.604E-15	0.0011				
U-238	3.295E-12	0.6362	1.451E-16	0.0000	1.088E-13	0.0210	3.400E-14	0.0066	8.653E-14	0.0167	9.889E-14	0.0191				
Total	4.544E-12	0.8774	3.443E-16	0.0001	2.109E-13	0.0407	6.589E-14	0.0127	1.669E-13	0.0322	1.911E-13	0.0369				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.723E-15	0.0007
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.149E-16	0.0002
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.604E-16	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.130E-14	0.0022
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.182E-16	0.0001
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.972E-13	0.0574
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.242E-12	0.2397
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.624E-12	0.6996
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.180E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.188E-14	0.0042	1.882E-16	0.0000	0.000E+00	0.0000	9.573E-14	0.0185	2.978E-14	0.0057	7.548E-14	0.0146	8.653E-14	0.0167
U-235	1.227E-12	0.2370	1.092E-17	0.0000	0.000E+00	0.0000	6.347E-15	0.0012	2.107E-15	0.0004	4.905E-15	0.0009	5.677E-15	0.0011
U-238	3.295E-12	0.6362	1.452E-16	0.0000	0.000E+00	0.0000	1.088E-13	0.0210	3.401E-14	0.0066	8.655E-14	0.0167	9.891E-14	0.0191
Total	4.544E-12	0.8774	3.443E-16	0.0001	0.000E+00	0.0000	2.109E-13	0.0407	6.589E-14	0.0127	1.669E-13	0.0322	1.911E-13	0.0369

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 22

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.096E-13	0.0598
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.246E-12	0.2406
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.624E-12	0.6996
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.180E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 23

Intrisk : Shiprock GW Evap. Pond_Offsite Res. Location C_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

[illegible]

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 3.000E+02 years

Radionuclides

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

[illegible]

1RESRAD-ONSITE, Version 7.2 T_{1/2} Limit = 180 days 03/25/2023 14:03 Page 24

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)

Water Dependent Pathways

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of Radon and its Decay Products at t= 3.000E+02 years

0

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

[illegible]

U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 25
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:03 Page 26
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.210E-07	0.000E+00	3.233E-08	1.789E-10	3.935E-10	4.539E-07
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C Atm Transport Post-Rem.

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	6.833E-15	0.9050	0.000E+00	0.0000	7.044E-16	0.0933	3.897E-18	0.0005	8.572E-18	0.0011	7.550E-15	1.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.833E-15	0.9050	0.000E+00	0.0000	7.044E-16	0.0933	3.897E-18	0.0005	8.572E-18	0.0011	7.550E-15	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location C_Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	6.833E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	7.044E-16	0.0933	3.897E-18	0.0005	8.572E-18	0.0011	7.550E-15	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	6.833E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	7.044E-16	0.0933	3.897E-18	0.0005	8.572E-18	0.0011	7.550E-15	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Dose Conversion Factor (and Related) Parameter Summary Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1(20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1(21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1(22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1(23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1(24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1(25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1(26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1(27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1(28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1(29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1(30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1(31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1(32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1(33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1(34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1(35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2(1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2(2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2(3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2(4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2(5)
B-1	U-234		3.479E-02	3.479E-02	DCF2(6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2(7)
B-1	U-238		2.973E-02	2.973E-02	DCF2(8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3(1)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3(2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3(3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3(4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3(5)
D-1	U-234	1.831E-04	1.831E-04	DCF3(6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3(7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC (2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC (2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC (3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC (3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC (4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC (4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC (5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC (5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC (6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC (7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC (8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC (9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport Post-Rem.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.500E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	2.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	2.300E-05	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	1.500E-06	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	2.000E-05	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ (1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ (1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ (1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ (1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ (1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ (1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH (6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH (7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH (8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC (1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU (1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS (1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.670E-02	ALEACH (1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC (2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU (2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS (2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH (2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK (2)

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.399E-03		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.056E-02		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.236E-05		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	7.000E-07	1.000E-04	---		MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---		ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	6.550E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	7.990E-02	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Site-Specific Parameter Summary (continued)

0		User	Used by RESRAD	Parameter
Menu	Parameter	Input	Default (If different from user input)	Name

R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	4.490E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	7.000E-07	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | 8.000E-02 | 8.000E-02 | --- | TE(3)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	25000.00 square meters	U-234	2.300E-05
Thickness:	0.15 meters	U-235	1.500E-06
Cover Depth:	0.00 meters	U-238	2.000E-05

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
 TDOSE(t): 2.957E-06 2.905E-06 2.805E-06 2.477E-06 1.723E-06 3.938E-07 0.000E+00 7.885E-10
 M(t): 1.183E-07 1.162E-07 1.122E-07 9.907E-08 6.892E-08 1.575E-08 0.000E+00 3.154E-11
 0Maximum TDOSE(t): 2.957E-06 mrem/yr at t = 0.000E+00 years
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.207E-09	0.0014	1.952E-10	0.0001	0.000E+00	0.0000	1.512E-07	0.0511	4.722E-08	0.0160	1.203E-07	0.0407	1.375E-07	0.0465
U-235	5.542E-07	0.1874	1.146E-11	0.0000	0.000E+00	0.0000	9.372E-09	0.0032	2.931E-09	0.0010	7.456E-09	0.0025	8.523E-09	0.0029
U-238	1.529E-06	0.5171	1.452E-10	0.0000	0.000E+00	0.0000	1.274E-07	0.0431	3.981E-08	0.0135	1.014E-07	0.0343	1.159E-07	0.0392
Total	2.088E-06	0.7060	3.518E-10	0.0001	0.000E+00	0.0000	2.880E-07	0.0974	8.996E-08	0.0304	2.292E-07	0.0775	2.620E-07	0.0886

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.606E-07	0.1558
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.825E-07	0.1970
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.914E-06	0.6473
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.957E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.145E-09	0.0014	1.911E-10	0.0001	0.000E+00	0.0000	1.480E-07	0.0509	4.622E-08	0.0159	1.178E-07	0.0405	1.346E-07	0.0463
U-235	5.456E-07	0.1878	1.123E-11	0.0000	0.000E+00	0.0000	9.182E-09	0.0032	2.879E-09	0.0010	7.298E-09	0.0025	8.343E-09	0.0029

U-238	1.505E-06	0.5179	1.421E-10	0.0000	0.000E+00	0.0000	1.248E-07	0.0429	3.897E-08	0.0134	9.928E-08	0.0342	1.135E-07	0.0391
Total	2.054E-06	0.7071	3.444E-10	0.0001	0.000E+00	0.0000	2.819E-07	0.0970	8.807E-08	0.0303	2.243E-07	0.0772	2.564E-07	0.0883

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.509E-07	0.1552
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.733E-07	0.1973
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.881E-06	0.6475
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.905E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 14

Summary : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.024E-09	0.0014	1.830E-10	0.0001	0.000E+00	0.0000	1.417E-07	0.0505	4.428E-08	0.0158	1.128E-07	0.0402	1.289E-07	0.0460
U-235	5.289E-07	0.1886	1.077E-11	0.0000	0.000E+00	0.0000	8.810E-09	0.0031	2.778E-09	0.0010	6.990E-09	0.0025	7.995E-09	0.0029
U-238	1.457E-06	0.5193	1.361E-10	0.0000	0.000E+00	0.0000	1.195E-07	0.0426	3.733E-08	0.0133	9.509E-08	0.0339	1.087E-07	0.0388
Total	1.989E-06	0.7093	3.299E-10	0.0001	0.000E+00	0.0000	2.701E-07	0.0963	8.438E-08	0.0301	2.149E-07	0.0766	2.456E-07	0.0876

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.320E-07	0.1540
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.555E-07	0.1981
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.817E-06	0.6479
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.805E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 15

Summary : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

0

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0*Sum of all water independent and dependent pathways.

Summary : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.

File : C:\RESRAD FAMILY\ONSITE\7.2\USERFILES\SHIPROCK POST REM OFFSITE RESD.RAD

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U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 19

Summary : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.313E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	5.617E-11	0.0712	3.108E-13	0.0004	6.835E-13	0.0009	7.885E-10	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.313E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	5.617E-11	0.0712	3.108E-13	0.0004	6.835E-13	0.0009	7.885E-10	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 20

Summary : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	2.003E-02	1.960E-02	1.878E-02	1.613E-02	1.030E-02	1.535E-03	0.000E+00	0.000E+00
	U-234	Th-230	1.000E+00	1.949E-07	5.628E-07	1.265E-06	3.422E-06	7.405E-06	6.640E-06	0.000E+00	0.000E+00
	U-234	Ra-226+D	1.000E+00	3.491E-09	2.442E-08	1.268E-07	1.049E-06	6.980E-06	2.691E-05	0.000E+00	0.000E+00
	U-234	Pb-210+D	1.000E+00	1.045E-11	1.377E-10	1.432E-09	3.099E-08	4.708E-07	2.654E-06	0.000E+00	0.000E+00
	U-234	ΣDSR(j)		2.003E-02	1.960E-02	1.878E-02	1.614E-02	1.032E-02	1.572E-03	0.000E+00	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	3.883E-01	3.822E-01	3.703E-01	3.311E-01	2.390E-01	6.127E-02	0.000E+00	0.000E+00
	U-235+D	Pa-231	1.000E+00	7.167E-06	2.208E-05	5.023E-05	1.310E-04	2.468E-04	1.302E-04	0.000E+00	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	1.306E-07	8.636E-07	4.215E-06	2.964E-05	1.315E-04	1.665E-04	0.000E+00	5.257E-04
	U-235+D	ΣDSR(j)		3.883E-01	3.822E-01	3.703E-01	3.313E-01	2.393E-01	6.157E-02	0.000E+00	5.257E-04
0U	U-238	U-238	5.450E-07	9.792E-09	9.585E-09	9.181E-09	7.886E-09	5.031E-09	7.455E-10	0.000E+00	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00
	U-238+D	U-234	1.000E+00	2.817E-08	8.293E-08	1.855E-07	4.782E-07	8.870E-07	4.357E-07	0.000E+00	0.000E+00
	U-238+D	Th-230	1.000E+00	1.878E-13	1.248E-12	6.281E-12	4.956E-11	2.952E-10	7.175E-10	0.000E+00	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	2.448E-15	3.670E-14	4.201E-13	1.021E-11	1.909E-10	2.154E-09	0.000E+00	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	6.116E-18	1.657E-16	3.684E-15	2.325E-13	1.019E-11	1.826E-10	0.000E+00	0.000E+00
	U-238+D	ΣDSR(j)		9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.248E+03	1.275E+03	1.331E+03	1.549E+03	2.424E+03	1.591E+04	*6.222E+09	*6.222E+09	
U-235	6.438E+01	6.541E+01	6.751E+01	7.546E+01	1.045E+02	4.061E+02	*2.160E+06	4.756E+04	
U-238	2.612E+02	2.658E+02	2.751E+02	3.108E+02	4.438E+02	1.884E+03	*3.361E+05	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	2.300E-05	0.000E+00	2.003E-02	1.248E+03	2.003E-02	1.248E+03
U-235	1.500E-06	0.000E+00	3.883E-01	6.438E+01	3.883E-01	6.438E+01
U-238	2.000E-05	0.000E+00	9.570E-02	2.612E+02	9.570E-02	2.612E+02

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00		4.606E-07	4.509E-07	4.319E-07	3.711E-07	2.369E-07	3.531E-08	0.000E+00	0.000E+00
U-234	U-238	1.000E+00		5.635E-13	1.659E-12	3.710E-12	9.564E-12	1.774E-11	8.714E-12	0.000E+00	0.000E+00
U-234	ΣDOSE(j)			4.606E-07	4.509E-07	4.319E-07	3.711E-07	2.369E-07	3.532E-08	0.000E+00	0.000E+00
0Th-230	U-234	1.000E+00		4.482E-12	1.294E-11	2.910E-11	7.870E-11	1.703E-10	1.527E-10	0.000E+00	0.000E+00
Th-230	U-238	1.000E+00		3.756E-18	2.497E-17	1.256E-16	9.912E-16	5.905E-15	1.435E-14	0.000E+00	0.000E+00
Th-230	ΣDOSE(j)			4.482E-12	1.294E-11	2.910E-11	7.870E-11	1.703E-10	1.527E-10	0.000E+00	0.000E+00
0Ra-226	U-234	1.000E+00		8.030E-14	5.616E-13	2.915E-12	2.412E-11	1.605E-10	6.190E-10	0.000E+00	0.000E+00
Ra-226	U-238	1.000E+00		4.895E-20	7.341E-19	8.401E-18	2.041E-16	3.818E-15	4.307E-14	0.000E+00	0.000E+00
Ra-226	ΣDOSE(j)			8.030E-14	5.616E-13	2.915E-12	2.412E-11	1.605E-10	6.191E-10	0.000E+00	0.000E+00
0Pb-210	U-234	1.000E+00		2.403E-16	3.167E-15	3.295E-14	7.128E-13	1.083E-11	6.105E-11	0.000E+00	0.000E+00
Pb-210	U-238	1.000E+00		1.223E-22	3.315E-21	7.368E-20	4.649E-18	2.038E-16	3.652E-15	0.000E+00	0.000E+00
Pb-210	ΣDOSE(j)			2.403E-16	3.167E-15	3.295E-14	7.128E-13	1.083E-11	6.105E-11	0.000E+00	0.000E+00
0U-235	U-235	1.000E+00		5.825E-07	5.733E-07	5.554E-07	4.967E-07	3.584E-07	9.190E-08	0.000E+00	0.000E+00
0Pa-231	U-235	1.000E+00		1.075E-11	3.312E-11	7.534E-11	1.965E-10	3.702E-10	1.953E-10	0.000E+00	0.000E+00
0Ac-227	U-235	1.000E+00		1.959E-13	1.295E-12	6.323E-12	4.445E-11	1.972E-10	2.497E-10	0.000E+00	7.885E-10
0U-238	U-238	5.450E-07		1.958E-13	1.917E-13	1.836E-13	1.577E-13	1.006E-13	1.491E-14	0.000E+00	0.000E+00
U-238	U-238	1.000E+00		1.914E-06	1.881E-06	1.817E-06	1.609E-06	1.127E-06	2.653E-07	0.000E+00	0.000E+00
U-238	ΣDOSE(j)			1.914E-06	1.881E-06	1.817E-06	1.609E-06	1.127E-06	2.653E-07	0.000E+00	0.000E+00

THF(i) is the thread fraction of the parent nuclide.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.

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Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide	Parent	THF(i)	S(j,t), pCi/g								
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00		2.300E-05	2.266E-05	2.200E-05	1.984E-05	1.477E-05	5.251E-06	2.737E-07	8.845E-12
U-234	U-238	1.000E+00		0.000E+00	5.564E-11	1.621E-10	4.871E-10	1.088E-09	1.289E-09	2.016E-10	2.175E-14
U-234	ΣS(j):			2.300E-05	2.266E-05	2.200E-05	1.984E-05	1.477E-05	5.252E-06	2.739E-07	8.866E-12
0Th-230	U-234	1.000E+00		0.000E+00	2.099E-10	6.206E-10	1.966E-09	5.124E-09	1.103E-08	1.408E-08	1.403E-08
Th-230	U-238	1.000E+00		0.000E+00	2.571E-16	2.269E-15	2.354E-14	1.748E-13	1.033E-12	2.218E-12	2.336E-12
Th-230	ΣS(j):			0.000E+00	2.099E-10	6.206E-10	1.966E-09	5.124E-09	1.104E-08	1.408E-08	1.404E-08
0Ra-226	U-234	1.000E+00		0.000E+00	4.542E-14	4.018E-13	4.206E-12	3.200E-11	2.040E-10	5.004E-10	5.540E-10
Ra-226	U-238	1.000E+00		0.000E+00	3.711E-20	9.820E-19	3.389E-17	7.493E-16	1.414E-14	7.093E-14	9.222E-14
Ra-226	ΣS(j):			0.000E+00	4.542E-14	4.018E-13	4.206E-12	3.200E-11	2.041E-10	5.004E-10	5.541E-10
0Pb-210	U-234	1.000E+00		0.000E+00	4.692E-16	1.227E-14	4.067E-13	8.080E-12	1.139E-10	3.883E-10	4.481E-10
Pb-210	U-238	1.000E+00		0.000E+00	2.881E-22	2.261E-20	2.501E-18	1.491E-16	6.781E-15	5.288E-14	7.459E-14
Pb-210	ΣS(j):			0.000E+00	4.692E-16	1.227E-14	4.067E-13	8.080E-12	1.140E-10	3.883E-10	4.482E-10
0U-235	U-235	1.000E+00		1.500E-06	1.478E-06	1.435E-06	1.294E-06	9.631E-07	3.425E-07	1.786E-08	5.785E-13
0Pa-231	U-235	1.000E+00		0.000E+00	3.127E-11	9.108E-11	2.738E-10	6.111E-10	7.240E-10	1.130E-10	1.211E-14

0Ac-227	U-235	1.000E+00	0.000E+00	4.890E-13	4.125E-12	3.672E-11	1.822E-10	3.494E-10	6.278E-11	7.038E-15
0U-238	U-238	5.450E-07	1.090E-11	1.074E-11	1.043E-11	9.403E-12	6.999E-12	2.489E-12	1.298E-13	4.203E-18
U-238	U-238	1.000E+00	2.000E-05	1.971E-05	1.913E-05	1.725E-05	1.284E-05	4.567E-06	2.382E-07	7.713E-12
U-238	ΣS(j):		2.000E-05	1.971E-05	1.913E-05	1.725E-05	1.284E-05	4.567E-06	2.382E-07	7.713E-12

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 8.67 seconds

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Part III: Intake Quantities and Health Risk Factors

Cancer Risk Slope Factors	2
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Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	5
Time= 1.000E+00	8
Time= 3.000E+00	11
Time= 1.000E+01	14
Time= 3.000E+01	17
Time= 1.000E+02	20
Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 3

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport Post-Rem.

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Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 4

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.

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Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	5.195E-01	5.192E-01	5.188E-01	5.169E-01	5.090E-01	4.061E-01	0.000E+00	0.000E+00
At-218	2.740E-11	5.070E-01	5.066E-01	5.059E-01	5.032E-01	4.932E-01	4.126E-01	0.000E+00	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	5.169E-01	5.167E-01	5.163E-01	5.145E-01	5.075E-01	4.337E-01	0.000E+00	0.000E+00
Bi-211	1.900E-07	4.875E-01	4.869E-01	4.855E-01	4.805E-01	4.622E-01	3.177E-01	0.000E+00	0.000E+00
Bi-214	7.340E-06	4.352E-01	4.342E-01	4.322E-01	4.248E-01	4.003E-01	2.579E-01	0.000E+00	0.000E+00
Bi-215	1.080E-06	4.749E-01	4.741E-01	4.726E-01	4.667E-01	4.462E-01	2.988E-01	0.000E+00	0.000E+00
Fr-223	1.350E-07	5.060E-01	5.056E-01	5.047E-01	5.013E-01	4.882E-01	3.630E-01	0.000E+00	0.000E+00
Hg-206	4.830E-07	4.908E-01	4.902E-01	4.889E-01	4.842E-01	4.667E-01	3.231E-01	0.000E+00	0.000E+00
Pa-231	1.270E-07	4.940E-01	4.934E-01	4.923E-01	4.878E-01	4.712E-01	3.299E-01	0.000E+00	0.000E+00
Pa-234	6.620E-06	4.590E-01	4.581E-01	4.563E-01	4.498E-01	4.273E-01	2.821E-01	0.000E+00	0.000E+00
Pa-234m	9.060E-08	4.683E-01	4.675E-01	4.659E-01	4.600E-01	4.398E-01	3.064E-01	0.000E+00	0.000E+00
Pb-210	1.480E-09	5.384E-01	5.384E-01	5.384E-01	5.384E-01	5.383E-01	5.262E-01	0.000E+00	0.000E+00
Pb-211	2.910E-07	4.702E-01	4.694E-01	4.678E-01	4.616E-01	4.402E-01	2.916E-01	0.000E+00	0.000E+00
Pb-214	9.940E-07	4.897E-01	4.891E-01	4.878E-01	4.830E-01	4.654E-01	3.219E-01	0.000E+00	0.000E+00
Po-210	4.510E-11	4.576E-01	4.568E-01	4.550E-01	4.483E-01	4.256E-01	2.802E-01	0.000E+00	0.000E+00
Po-211	3.760E-08	4.588E-01	4.579E-01	4.562E-01	4.496E-01	4.272E-01	2.818E-01	0.000E+00	0.000E+00
Po-214	3.850E-10	4.594E-01	4.585E-01	4.568E-01	4.502E-01	4.277E-01	2.809E-01	0.000E+00	0.000E+00
Po-215	7.480E-10	4.807E-01	4.799E-01	4.785E-01	4.730E-01	4.533E-01	3.068E-01	0.000E+00	0.000E+00
Po-218	6.840E-15	5.225E-01	5.225E-01	5.225E-01	5.224E-01	5.208E-01	4.607E-01	0.000E+00	0.000E+00
Ra-223	4.550E-07	5.029E-01	5.024E-01	5.015E-01	4.979E-01	4.840E-01	3.519E-01	0.000E+00	0.000E+00
Ra-226	2.500E-08	5.061E-01	5.057E-01	5.049E-01	5.015E-01	4.886E-01	3.569E-01	0.000E+00	0.000E+00
Rn-218	3.390E-09	4.681E-01	4.673E-01	4.656E-01	4.594E-01	4.380E-01	2.907E-01	0.000E+00	0.000E+00
Rn-219	2.350E-07	4.899E-01	4.893E-01	4.880E-01	4.832E-01	4.656E-01	3.219E-01	0.000E+00	0.000E+00
Rn-222	1.690E-09	4.770E-01	4.762E-01	4.747E-01	4.689E-01	4.485E-01	3.005E-01	0.000E+00	0.000E+00
Th-227	4.450E-07	4.983E-01	4.978E-01	4.967E-01	4.926E-01	4.773E-01	3.392E-01	0.000E+00	0.000E+00
Th-230	8.450E-10	5.202E-01	5.200E-01	5.197E-01	5.185E-01	5.126E-01	4.175E-01	0.000E+00	0.000E+00
Th-231	2.490E-08	5.332E-01	5.330E-01	5.327E-01	5.314E-01	5.256E-01	4.330E-01	0.000E+00	0.000E+00
Th-234	1.780E-08	5.204E-01	5.203E-01	5.202E-01	5.196E-01	5.160E-01	4.335E-01	0.000E+00	0.000E+00
Tl-206	6.110E-09	5.148E-01	5.145E-01	5.140E-01	5.120E-01	5.045E-01	4.319E-01	0.000E+00	0.000E+00
Tl-207	1.590E-08	4.838E-01	4.832E-01	4.819E-01	4.771E-01	4.602E-01	3.407E-01	0.000E+00	0.000E+00
Tl-210	1.340E-05	4.400E-01	4.391E-01	4.371E-01	4.299E-01	4.058E-01	2.634E-01	0.000E+00	0.000E+00
U-234	2.530E-10	5.332E-01	5.331E-01	5.328E-01	5.316E-01	5.263E-01	4.454E-01	0.000E+00	0.000E+00
U-235	5.510E-07	5.068E-01	5.064E-01	5.055E-01	5.023E-01	4.896E-01	3.587E-01	0.000E+00	0.000E+00
U-238	1.240E-10	5.147E-01	5.143E-01	5.136E-01	5.107E-01	5.001E-01	4.030E-01	0.000E+00	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 5

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	5.671E-09	8.338E-04	2.603E-04	6.639E-04	7.589E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.517E-03
U-235	3.698E-10	5.438E-05	1.698E-05	4.330E-05	4.950E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.641E-04
U-238	4.931E-09	7.250E-04	2.263E-04	5.773E-04	6.599E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.189E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.274E-15	0.0000	7.516E-20	0.0000	3.453E-17	0.0000	2.243E-18	0.0000	9.017E-19	0.0000	3.084E-17	0.0000
Pa-231	5.110E-16	0.0000	1.392E-19	0.0000	2.420E-16	0.0000	3.217E-16	0.0000	4.651E-19	0.0000	5.515E-17	0.0000
Pb-210	8.794E-20	0.0000	2.584E-22	0.0000	1.731E-17	0.0000	3.700E-18	0.0000	1.935E-18	0.0000	3.862E-18	0.0000
Ra-226	8.025E-16	0.0000	1.380E-21	0.0000	5.904E-17	0.0000	6.067E-18	0.0000	8.100E-18	0.0000	3.371E-18	0.0000
Th-230	2.756E-17	0.0000	4.700E-19	0.0000	9.703E-17	0.0000	2.169E-17	0.0000	1.598E-18	0.0000	2.199E-16	0.0000
U-234	6.671E-14	0.0015	3.130E-15	0.0001	1.580E-12	0.0361	4.935E-13	0.0113	1.257E-12	0.0288	1.437E-12	0.0329
U-235	9.365E-12	0.2141	1.835E-16	0.0000	1.053E-13	0.0024	3.290E-14	0.0008	8.381E-14	0.0019	9.579E-14	0.0022
U-238	2.397E-11	0.5481	2.316E-15	0.0001	1.735E-12	0.0397	5.418E-13	0.0124	1.380E-12	0.0316	1.578E-12	0.0361

Total 3.341E-11 0.7639 5.629E-15 0.0001 3.420E-12 0.0782 1.069E-12 0.0244 2.722E-12 0.0622 3.111E-12 0.0711
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 6
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.342E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.130E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.689E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.790E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.683E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.838E-12	0.1106
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.683E-12	0.2214
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.921E-11	0.6679
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.373E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.753E-14	0.0015	3.130E-15	0.0001	0.000E+00	0.0000	1.580E-12	0.0361	4.935E-13	0.0113	1.257E-12	0.0288	1.437E-12	0.0329

U-235	9.367E-12	0.2142	1.837E-16	0.0000	0.000E+00	0.0000	1.056E-13	0.0024	3.322E-14	0.0008	8.381E-14	0.0019	9.588E-14	0.0022
U-238	2.397E-11	0.5481	2.316E-15	0.0001	0.000E+00	0.0000	1.735E-12	0.0397	5.418E-13	0.0124	1.380E-12	0.0316	1.578E-12	0.0361
Total	3.341E-11	0.7639	5.629E-15	0.0001	0.000E+00	0.0000	3.420E-12	0.0782	1.069E-12	0.0244	2.722E-12	0.0622	3.111E-12	0.0711

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 7
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.839E-12	0.1106
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.686E-12	0.2215
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.921E-11	0.6679
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.373E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 8
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.198E-16	2.131E-11	1.003E-11	4.793E-13	1.603E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.785E-11
Pa-231	7.659E-15	4.388E-09	5.599E-09	1.077E-11	1.025E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.102E-08
Pb-210	1.149E-19	8.753E-14	1.777E-14	8.791E-15	1.538E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.295E-13
Ra-226	1.112E-17	2.441E-11	2.168E-12	3.239E-12	1.489E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.131E-11
Th-230	5.141E-14	3.184E-09	7.667E-10	6.524E-11	6.881E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.090E-08
U-234	5.550E-09	8.167E-04	2.551E-04	6.499E-04	7.428E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.465E-03
U-235	3.620E-10	5.326E-05	1.664E-05	4.239E-05	4.844E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.607E-04
U-238	4.826E-09	7.102E-04	2.218E-04	5.651E-04	6.459E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.143E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide												
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.394E-15	0.0000	8.195E-20	0.0000	3.763E-17	0.0000	2.399E-18	0.0000	9.832E-19	0.0000	3.363E-17	0.0000
Pa-231	5.442E-16	0.0000	1.477E-19	0.0000	2.568E-16	0.0000	3.414E-16	0.0000	4.933E-19	0.0000	5.852E-17	0.0000
Pb-210	1.010E-19	0.0000	2.952E-22	0.0000	1.976E-17	0.0000	4.223E-18	0.0000	2.210E-18	0.0000	4.411E-18	0.0000
Ra-226	8.912E-16	0.0000	1.527E-21	0.0000	6.534E-17	0.0000	6.717E-18	0.0000	8.966E-18	0.0000	3.730E-18	0.0000
Th-230	2.953E-17	0.0000	5.012E-19	0.0000	1.035E-16	0.0000	2.313E-17	0.0000	1.703E-18	0.0000	2.345E-16	0.0000
U-234	6.570E-14	0.0015	3.061E-15	0.0001	1.546E-12	0.0360	4.828E-13	0.0112	1.230E-12	0.0286	1.406E-12	0.0327
U-235	9.218E-12	0.2145	1.795E-16	0.0000	1.030E-13	0.0024	3.218E-14	0.0007	8.198E-14	0.0019	9.370E-14	0.0022
U-238	2.358E-11	0.5488	2.265E-15	0.0001	1.697E-12	0.0395	5.300E-13	0.0123	1.350E-12	0.0314	1.543E-12	0.0359
Total	3.286E-11	0.7649	5.507E-15	0.0001	3.346E-12	0.0779	1.045E-12	0.0243	2.662E-12	0.0620	3.043E-12	0.0708

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.469E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.202E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.070E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.759E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.928E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.733E-12	0.1102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.529E-12	0.2218
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.870E-11	0.6680
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.297E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.662E-14	0.0016	3.062E-15	0.0001	0.000E+00	0.0000	1.546E-12	0.0360	4.828E-13	0.0112	1.230E-12	0.0286	1.406E-12	0.0327
U-235	9.220E-12	0.2146	1.797E-16	0.0000	0.000E+00	0.0000	1.033E-13	0.0024	3.252E-14	0.0008	8.198E-14	0.0019	9.379E-14	0.0022
U-238	2.358E-11	0.5488	2.265E-15	0.0001	0.000E+00	0.0000	1.697E-12	0.0395	5.300E-13	0.0123	1.350E-12	0.0314	1.543E-12	0.0359
Total	3.286E-11	0.7649	5.507E-15	0.0001	0.000E+00	0.0000	3.346E-12	0.0779	1.045E-12	0.0243	2.662E-12	0.0620	3.043E-12	0.0708

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 10

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.734E-12	0.1102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.532E-12	0.2218
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.870E-11	0.6680
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.297E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 11

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	9.967E-16	1.576E-10	3.201E-11	3.928E-12	1.334E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.269E-10
Pa-231	2.201E-14	1.284E-08	1.688E-08	2.652E-11	2.945E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.269E-08
Pb-210	2.964E-18	1.929E-12	4.118E-13	2.089E-13	3.967E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.946E-12
Ra-226	9.709E-17	2.233E-10	2.201E-11	3.032E-11	1.299E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.886E-10
Th-230	1.500E-13	8.974E-09	2.051E-09	1.582E-10	2.007E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.125E-08
U-234	5.316E-09	7.823E-04	2.444E-04	6.225E-04	7.115E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.361E-03
U-235	3.467E-10	5.102E-05	1.594E-05	4.060E-05	4.640E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.540E-04
U-238	4.623E-09	6.802E-04	2.125E-04	5.413E-04	6.187E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.053E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.649E-15	0.0000	9.616E-20	0.0000	4.411E-17	0.0000	2.701E-18	0.0000	1.153E-18	0.0000	3.946E-17	0.0000
Pa-231	6.071E-16	0.0000	1.633E-19	0.0000	2.842E-16	0.0000	3.779E-16	0.0000	5.441E-19	0.0000	6.474E-17	0.0000
Pb-210	1.311E-19	0.0000	3.787E-22	0.0000	2.532E-17	0.0000	5.411E-18	0.0000	2.833E-18	0.0000	5.659E-18	0.0000
Ra-226	1.085E-15	0.0000	1.846E-21	0.0000	7.898E-17	0.0000	8.124E-18	0.0000	1.084E-17	0.0000	4.507E-18	0.0000
Th-230	3.337E-17	0.0000	5.606E-19	0.0000	1.156E-16	0.0000	2.583E-17	0.0000	1.899E-18	0.0000	2.623E-16	0.0000
U-234	6.373E-14	0.0015	2.929E-15	0.0001	1.479E-12	0.0357	4.619E-13	0.0111	1.177E-12	0.0284	1.345E-12	0.0324
U-235	8.930E-12	0.2153	1.717E-16	0.0000	9.856E-14	0.0024	3.079E-14	0.0007	7.843E-14	0.0019	8.965E-14	0.0022
U-238	2.281E-11	0.5500	2.167E-15	0.0001	1.623E-12	0.0391	5.071E-13	0.0122	1.292E-12	0.0311	1.476E-12	0.0356

Total 3.181E-11 0.7670 5.268E-15 0.0001 3.201E-12 0.0772 1.000E-12 0.0241 2.547E-12 0.0614 2.911E-12 0.0702
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 12
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESD.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.737E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.335E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.935E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.187E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.396E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.529E-12	0.1092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.228E-12	0.2225
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.771E-11	0.6682
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.147E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.485E-14	0.0016	2.929E-15	0.0001	0.000E+00	0.0000	1.479E-12	0.0357	4.619E-13	0.0111	1.177E-12	0.0284	1.345E-12	0.0324

U-235	8.933E-12	0.2154	1.720E-16	0.0000	0.000E+00	0.0000	9.889E-14	0.0024	3.117E-14	0.0008	7.844E-14	0.0019	8.975E-14	0.0022
U-238	2.281E-11	0.5500	2.167E-15	0.0001	0.000E+00	0.0000	1.623E-12	0.0391	5.071E-13	0.0122	1.292E-12	0.0311	1.477E-12	0.0356
Total	3.181E-11	0.7670	5.268E-15	0.0001	0.000E+00	0.0000	3.201E-12	0.0772	1.000E-12	0.0241	2.547E-12	0.0614	2.911E-12	0.0702

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 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.530E-12	0.1092
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.231E-12	0.2226
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.771E-11	0.6682
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.147E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 14
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	8.449E-15	1.275E-09	1.082E-10	3.309E-11	1.131E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.548E-09
Pa-231	6.300E-14	3.698E-08	4.911E-08	7.148E-11	8.431E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.459E-08
Pb-210	9.358E-17	5.694E-11	1.218E-11	6.333E-12	1.252E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.798E-11
Ra-226	9.678E-16	2.262E-09	2.311E-10	3.099E-10	1.295E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.933E-09
Th-230	4.524E-13	2.675E-08	5.991E-09	4.433E-10	6.055E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.373E-08
U-234	4.566E-09	6.719E-04	2.099E-04	5.347E-04	6.111E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.027E-03
U-235	2.978E-10	4.382E-05	1.369E-05	3.487E-05	3.985E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.322E-04
U-238	3.970E-09	5.842E-04	1.825E-04	4.649E-04	5.314E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.763E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

Water-ind. == Water-independent Water-dep. == Water-dependent

0 Water Independent Pathways (Inhalation excludes radon)

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.738E-15	0.0001
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.709E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.142E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.083E-15	0.0001
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.806E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.875E-12	0.1058
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.239E-12	0.2251
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.449E-11	0.6689
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.661E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.923E-14	0.0016	2.505E-15	0.0001	0.000E+00	0.0000	1.265E-12	0.0345	3.949E-13	0.0108	1.006E-12	0.0275	1.150E-12	0.0314
U-235	7.988E-12	0.2182	1.472E-16	0.0000	0.000E+00	0.0000	8.469E-14	0.0023	2.680E-14	0.0007	6.706E-14	0.0018	7.679E-14	0.0021
U-238	2.030E-11	0.5544	1.853E-15	0.0001	0.000E+00	0.0000	1.388E-12	0.0379	4.336E-13	0.0118	1.105E-12	0.0302	1.262E-12	0.0345
Total	2.834E-11	0.7743	4.505E-15	0.0001	0.000E+00	0.0000	2.737E-12	0.0748	8.553E-13	0.0234	2.178E-12	0.0595	2.489E-12	0.0680

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.877E-12	0.1059
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.244E-12	0.2252
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.449E-11	0.6689
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.661E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.595E-14	5.354E-09	2.614E-10	1.405E-10	4.811E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.057E-08
Pa-231	1.205E-13	7.089E-08	9.441E-08	1.343E-10	1.613E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.816E-07
Pb-210	1.594E-15	9.501E-10	2.030E-10	1.065E-10	2.133E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.473E-09
Ra-226	6.312E-15	1.482E-08	1.529E-09	2.036E-09	8.448E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.923E-08
Th-230	1.011E-12	5.954E-08	1.326E-08	9.687E-10	1.353E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.090E-07
U-234	2.913E-09	4.286E-04	1.339E-04	3.411E-04	3.898E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.293E-03
U-235	1.900E-10	2.795E-05	8.732E-06	2.224E-05	2.542E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.435E-05
U-238	2.533E-09	3.727E-04	1.164E-04	2.966E-04	3.390E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.125E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.921E-15	0.0002	2.479E-19	0.0000	1.130E-16	0.0000	4.950E-18	0.0000	2.972E-18	0.0000	1.017E-16	0.0000
Pa-231	1.072E-15	0.0000	2.474E-19	0.0000	4.310E-16	0.0000	5.743E-16	0.0000	8.146E-19	0.0000	9.806E-17	0.0000
Pb-210	1.168E-18	0.0000	2.803E-21	0.0000	1.860E-16	0.0000	3.972E-17	0.0000	2.087E-17	0.0000	4.189E-17	0.0000
Ra-226	5.015E-15	0.0002	7.557E-21	0.0000	3.241E-16	0.0000	3.349E-17	0.0000	4.453E-17	0.0000	1.845E-17	0.0000
Th-230	7.413E-17	0.0000	1.032E-18	0.0000	2.124E-16	0.0000	4.727E-17	0.0000	3.446E-18	0.0000	4.827E-16	0.0000
U-234	4.201E-14	0.0017	1.572E-15	0.0001	7.937E-13	0.0313	2.479E-13	0.0098	6.316E-13	0.0249	7.219E-13	0.0284
U-235	5.744E-12	0.2263	9.218E-17	0.0000	5.291E-14	0.0021	1.653E-14	0.0007	4.210E-14	0.0017	4.812E-14	0.0019
U-238	1.440E-11	0.5671	1.163E-15	0.0000	8.714E-13	0.0343	2.722E-13	0.0107	6.934E-13	0.0273	7.925E-13	0.0312

Total 2.019E-11 0.7955 2.829E-15 0.0001 1.719E-12 0.0677 5.374E-13 0.0212 1.367E-12 0.0539 1.563E-12 0.0616
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 18
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.144E-15	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.177E-15	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.896E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.436E-15	0.0002
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.210E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.439E-12	0.0961
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.904E-12	0.2326
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-11	0.6708
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.538E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	4.709E-14	0.0019	1.573E-15	0.0001	0.000E+00	0.0000	7.944E-13	0.0313	2.480E-13	0.0098	6.316E-13	0.0249	7.223E-13	0.0285

U-235	5.750E-12	0.2265	9.267E-17	0.0000	0.000E+00	0.0000	5.345E-14	0.0021	1.711E-14	0.0007	4.210E-14	0.0017	4.832E-14	0.0019
U-238	1.440E-11	0.5671	1.163E-15	0.0000	0.000E+00	0.0000	8.715E-13	0.0343	2.722E-13	0.0107	6.935E-13	0.0273	7.926E-13	0.0312
Total	2.019E-11	0.7955	2.829E-15	0.0001	0.000E+00	0.0000	1.719E-12	0.0677	5.374E-13	0.0212	1.367E-12	0.0539	1.563E-12	0.0616

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 19
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.445E-12	0.0963
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.911E-12	0.2329
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-11	0.6708
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.538E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 20
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.871E-14	4.260E-09	1.590E-10	1.122E-10	3.843E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.373E-09
Pa-231	5.950E-14	3.503E-08	4.672E-08	6.591E-11	7.963E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.977E-08
Pb-210	9.365E-15	5.546E-09	1.185E-09	6.230E-10	1.253E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.607E-09
Ra-226	1.677E-14	3.946E-08	4.089E-09	5.426E-09	2.244E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.122E-08
Th-230	9.069E-13	5.339E-08	1.187E-08	8.629E-10	1.214E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.875E-07
U-234	4.316E-10	6.354E-05	1.985E-05	5.055E-05	5.777E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.917E-04
U-235	2.815E-11	4.144E-06	1.295E-06	3.297E-06	3.768E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.250E-05
U-238	3.753E-10	5.526E-05	1.727E-05	4.396E-05	5.023E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.667E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide												
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.887E-15	0.0007	1.131E-19	0.0000	5.144E-17	0.0000	1.900E-18	0.0000	1.355E-18	0.0000	4.640E-17	0.0000
Pa-231	6.136E-16	0.0001	8.198E-20	0.0000	1.430E-16	0.0000	1.908E-16	0.0000	2.689E-19	0.0000	3.249E-17	0.0000
Pb-210	6.724E-18	0.0000	6.662E-21	0.0000	4.405E-16	0.0001	9.411E-17	0.0000	4.948E-17	0.0000	9.955E-17	0.0000
Ra-226	1.124E-14	0.0021	1.037E-20	0.0000	4.454E-16	0.0001	4.619E-17	0.0000	6.125E-17	0.0000	2.533E-17	0.0000
Th-230	9.234E-17	0.0000	6.209E-19	0.0000	1.278E-16	0.0000	2.842E-17	0.0000	2.065E-18	0.0000	2.905E-16	0.0001
U-234	1.154E-14	0.0022	1.962E-16	0.0000	9.910E-14	0.0188	3.097E-14	0.0059	7.882E-14	0.0149	9.007E-14	0.0170
U-235	1.311E-12	0.2481	1.150E-17	0.0000	6.606E-15	0.0013	2.064E-15	0.0004	5.254E-15	0.0010	6.004E-15	0.0011
U-238	3.295E-12	0.6238	1.451E-16	0.0000	1.088E-13	0.0206	3.400E-14	0.0064	8.653E-14	0.0164	9.889E-14	0.0187
Total	4.633E-12	0.8770	3.536E-16	0.0001	2.157E-13	0.0408	6.740E-14	0.0128	1.707E-13	0.0323	1.955E-13	0.0370

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.988E-15	0.0008
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.802E-16	0.0002
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.904E-16	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-14	0.0022
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.418E-16	0.0001
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.107E-13	0.0588
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.330E-12	0.2518
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.624E-12	0.6859
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.283E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.288E-14	0.0043	1.967E-16	0.0000	0.000E+00	0.0000	1.001E-13	0.0189	3.113E-14	0.0059	7.891E-14	0.0149	9.046E-14	0.0171
U-235	1.315E-12	0.2489	1.170E-17	0.0000	0.000E+00	0.0000	6.800E-15	0.0013	2.257E-15	0.0004	5.256E-15	0.0010	6.083E-15	0.0012
U-238	3.295E-12	0.6238	1.452E-16	0.0000	0.000E+00	0.0000	1.088E-13	0.0206	3.401E-14	0.0064	8.655E-14	0.0164	9.891E-14	0.0187
Total	4.633E-12	0.8770	3.536E-16	0.0001	0.000E+00	0.0000	2.157E-13	0.0408	6.740E-14	0.0128	1.707E-13	0.0323	1.955E-13	0.0370

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 22

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.237E-13	0.0613
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.335E-12	0.2528
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.624E-12	0.6859
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.283E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 23

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

[illegible]

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 3.000E+02 years

Radionuclides

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Radio-Nuclide		Water Independent Pathways (Inhalation excludes radon)											
		Ground		Inhalation		Plant		Meat		Milk		Soil	
		risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000

U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 25
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 26
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.510E-07	0.000E+00	3.464E-08	1.917E-10	4.216E-10	4.863E-07
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:27 Page 27

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport Post-Rem.

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	7.321E-15	0.9050	0.000E+00	0.0000	7.547E-16	0.0933	4.176E-18	0.0005	9.184E-18	0.0011	8.089E-15	1.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.321E-15	0.9050	0.000E+00	0.0000	7.547E-16	0.0933	4.176E-18	0.0005	9.184E-18	0.0011	8.089E-15	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location D_Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.321E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	7.547E-16	0.0933	4.176E-18	0.0005	9.184E-18	0.0011	8.089E-15	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.321E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	7.547E-16	0.0933	4.176E-18	0.0005	9.184E-18	0.0011	8.089E-15	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1(20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1(21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1(22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1(23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1(24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1(25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1(26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1(27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1(28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1(29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1(30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1(31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1(32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1(33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1(34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1(35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2(1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2(2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2(3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2(4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2(5)
B-1	U-234		3.479E-02	3.479E-02	DCF2(6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2(7)
B-1	U-238		2.973E-02	2.973E-02	DCF2(8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3(1)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3(2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3(3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3(4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3(5)
D-1	U-234	1.831E-04	1.831E-04	DCF3(6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3(7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 4
Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC (2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC (2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC (3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC (3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC (4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC (4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC (5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC (5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC (6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC (7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC (8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC (9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport Post-Rem.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.500E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	3.250E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	6.000E-05	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	3.900E-06	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	5.300E-05	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.670E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.399E-03		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.056E-02		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.236E-05		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	7.000E-07	1.000E-04	---		MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---		ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	6.550E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	7.990E-02	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.
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Site-Specific Parameter Summary (continued)

0	Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
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R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	4.490E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	7.000E-07	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | 8.000E-02 | 8.000E-02 | --- | TE(3)
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

1 RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 10

Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

1 RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 11

Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	25000.00 square meters	U-234	6.000E-05
Thickness:	0.15 meters	U-235	3.900E-06
Cover Depth:	0.00 meters	U-238	5.300E-05

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
TDOSE(t): 7.788E-06 7.652E-06 7.387E-06 6.523E-06 4.538E-06 1.038E-06 0.000E+00 2.050E-09
M(t): 3.115E-07 3.061E-07 2.955E-07 2.609E-07 1.815E-07 4.150E-08 0.000E+00 8.200E-11

0Maximum TDOSE(t): 7.788E-06 mrem/yr at t = 0.000E+00 years

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 12

Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.097E-08	0.0014	5.092E-10	0.0001	0.000E+00	0.0000	3.944E-07	0.0506	1.232E-07	0.0158	3.139E-07	0.0403	3.587E-07	0.0461
U-235	1.441E-06	0.1850	2.980E-11	0.0000	0.000E+00	0.0000	2.437E-08	0.0031	7.620E-09	0.0010	1.939E-08	0.0025	2.216E-08	0.0028
U-238	4.052E-06	0.5203	3.847E-10	0.0000	0.000E+00	0.0000	3.377E-07	0.0434	1.055E-07	0.0135	2.688E-07	0.0345	3.072E-07	0.0394
Total	5.504E-06	0.7067	9.237E-10	0.0001	0.000E+00	0.0000	7.565E-07	0.0971	2.363E-07	0.0303	6.020E-07	0.0773	6.881E-07	0.0884

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.202E-06	0.1543
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.514E-06	0.1945
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.072E-06	0.6513
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.788E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 13

Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.081E-08	0.0014	4.984E-10	0.0001	0.000E+00	0.0000	3.860E-07	0.0504	1.206E-07	0.0158	3.072E-07	0.0401	3.511E-07	0.0459
U-235	1.419E-06	0.1854	2.919E-11	0.0000	0.000E+00	0.0000	2.387E-08	0.0031	7.487E-09	0.0010	1.897E-08	0.0025	2.169E-08	0.0028

U-238	3.987E-06	0.5211	3.765E-10	0.0000	0.000E+00	0.0000	3.306E-07	0.0432	1.033E-07	0.0135	2.631E-07	0.0344	3.007E-07	0.0393
Total	5.417E-06	0.7079	9.042E-10	0.0001	0.000E+00	0.0000	7.405E-07	0.0968	2.313E-07	0.0302	5.893E-07	0.0770	6.735E-07	0.0880

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.176E-06	0.1537
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.491E-06	0.1948
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.985E-06	0.6515
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.652E-06	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 14

Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	1.050E-08	0.0014	4.775E-10	0.0001	0.000E+00	0.0000	3.698E-07	0.0501	1.155E-07	0.0156	2.942E-07	0.0398	3.364E-07	0.0455
U-235	1.375E-06	0.1862	2.799E-11	0.0000	0.000E+00	0.0000	2.291E-08	0.0031	7.223E-09	0.0010	1.817E-08	0.0025	2.079E-08	0.0028
U-238	3.860E-06	0.5225	3.607E-10	0.0000	0.000E+00	0.0000	3.167E-07	0.0429	9.891E-08	0.0134	2.520E-07	0.0341	2.880E-07	0.0390
Total	5.245E-06	0.7101	8.661E-10	0.0001	0.000E+00	0.0000	7.093E-07	0.0960	2.216E-07	0.0300	5.644E-07	0.0764	6.452E-07	0.0873

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.127E-06	0.1525
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.444E-06	0.1955
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.816E-06	0.6519
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.387E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

		Water Independent Pathways (Inhalation excludes radon)												
Radio-Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	9.494E-09	0.0015	4.103E-10	0.0001	0.000E+00	0.0000	3.176E-07	0.0487	9.919E-08	0.0152	2.527E-07	0.0387	2.889E-07	0.0443
U-235	1.232E-06	0.1889	2.415E-11	0.0000	0.000E+00	0.0000	1.979E-08	0.0030	6.361E-09	0.0010	1.561E-08	0.0024	1.788E-08	0.0027
U-238	3.442E-06	0.5277	3.097E-10	0.0000	0.000E+00	0.0000	2.719E-07	0.0417	8.494E-08	0.0130	2.164E-07	0.0332	2.473E-07	0.0379
Total	4.684E-06	0.7180	7.442E-10	0.0001	0.000E+00	0.0000	6.093E-07	0.0934	1.905E-07	0.0292	4.847E-07	0.0743	5.541E-07	0.0849

		Water Dependent Pathways													
		Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-		mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Nuclide															
U-234		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.682E-07	0.1484
U-235		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.292E-06	0.1981
U-238		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.263E-06	0.6535
Total		0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.523E-06	1.0000

File : C:\RESRAD FAMILY\ONSITE\7.2\USERFILES\SHIPROCK POST REM OFFSITE RESE.RAD

		Water Independent Pathways (Inhalation excludes radon)												
Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	7.326E-09	0.0016	2.623E-10	0.0001	0.000E+00	0.0000	2.026E-07	0.0446	6.327E-08	0.0139	1.611E-07	0.0355	1.844E-07	0.0406
U-235	8.948E-07	0.1972	1.562E-11	0.0000	0.000E+00	0.0000	1.285E-08	0.0028	4.344E-09	0.0010	9.951E-09	0.0022	1.147E-08	0.0025
U-238	2.462E-06	0.5426	1.975E-10	0.0000	0.000E+00	0.0000	1.734E-07	0.0382	5.416E-08	0.0119	1.380E-07	0.0304	1.577E-07	0.0347
Total	3.364E-06	0.7414	4.754E-10	0.0001	0.000E+00	0.0000	3.888E-07	0.0857	1.218E-07	0.0268	3.090E-07	0.0681	3.535E-07	0.0779

[illegible]

U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.189E-07	0.1364
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.334E-07	0.2057
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.986E-06	0.6579
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.538E-06	1.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.901E-09	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	1.460E-10	0.0712	8.080E-13	0.0004	1.777E-12	0.0009	2.050E-09	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.901E-09	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	1.460E-10	0.0712	8.080E-13	0.0004	1.777E-12	0.0009	2.050E-09	1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 20

Summary : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	2.003E-02	1.960E-02	1.878E-02	1.613E-02	1.030E-02	1.535E-03	0.000E+00	0.000E+00
	U-234	Th-230	1.000E+00	1.949E-07	5.628E-07	1.265E-06	3.422E-06	7.405E-06	6.640E-06	0.000E+00	0.000E+00
	U-234	Ra-226+D	1.000E+00	3.491E-09	2.442E-08	1.268E-07	1.049E-06	6.980E-06	2.691E-05	0.000E+00	0.000E+00
	U-234	Pb-210+D	1.000E+00	1.045E-11	1.377E-10	1.432E-09	3.099E-08	4.708E-07	2.654E-06	0.000E+00	0.000E+00
	U-234	ΣDSR(j)		2.003E-02	1.960E-02	1.878E-02	1.614E-02	1.032E-02	1.572E-03	0.000E+00	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	3.883E-01	3.822E-01	3.703E-01	3.311E-01	2.390E-01	6.127E-02	0.000E+00	0.000E+00
	U-235+D	Pa-231	1.000E+00	7.167E-06	2.208E-05	5.023E-05	1.310E-04	2.468E-04	1.302E-04	0.000E+00	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	1.306E-07	8.636E-07	4.215E-06	2.964E-05	1.315E-04	1.665E-04	0.000E+00	5.257E-04
	U-235+D	ΣDSR(j)		3.883E-01	3.822E-01	3.703E-01	3.313E-01	2.393E-01	6.157E-02	0.000E+00	5.257E-04
0U	U-238	U-238	5.450E-07	9.792E-09	9.585E-09	9.181E-09	7.886E-09	5.031E-09	7.455E-10	0.000E+00	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00
	U-238+D	U-234	1.000E+00	2.817E-08	8.293E-08	1.855E-07	4.782E-07	8.870E-07	4.357E-07	0.000E+00	0.000E+00
	U-238+D	Th-230	1.000E+00	1.878E-13	1.248E-12	6.281E-12	4.956E-11	2.952E-10	7.175E-10	0.000E+00	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	2.448E-15	3.670E-14	4.201E-13	1.021E-11	1.909E-10	2.154E-09	0.000E+00	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	6.116E-18	1.657E-16	3.684E-15	2.325E-13	1.019E-11	1.826E-10	0.000E+00	0.000E+00
	U-238+D	ΣDSR(j)		9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.248E+03	1.275E+03	1.331E+03	1.549E+03	2.424E+03	1.591E+04	*6.222E+09	*6.222E+09	
U-235	6.438E+01	6.541E+01	6.751E+01	7.546E+01	1.045E+02	4.061E+02	*2.160E+06	4.756E+04	
U-238	2.612E+02	2.658E+02	2.751E+02	3.108E+02	4.438E+02	1.884E+03	*3.361E+05	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	6.000E-05	0.000E+00	2.003E-02	1.248E+03	2.003E-02	1.248E+03
U-235	3.900E-06	0.000E+00	3.883E-01	6.438E+01	3.883E-01	6.438E+01
U-238	5.300E-05	0.000E+00	9.570E-02	2.612E+02	9.570E-02	2.612E+02

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		1.202E-06	1.176E-06	1.127E-06	9.680E-07	6.180E-07	9.212E-08	0.000E+00 0.000E+00
U-234	U-238	1.000E+00		1.493E-12	4.395E-12	9.831E-12	2.534E-11	4.701E-11	2.309E-11	0.000E+00 0.000E+00
U-234	ΣDOSE(j)			1.202E-06	1.176E-06	1.127E-06	9.680E-07	6.181E-07	9.214E-08	0.000E+00 0.000E+00
0Th-230	U-234	1.000E+00		1.169E-11	3.377E-11	7.592E-11	2.053E-10	4.443E-10	3.984E-10	0.000E+00 0.000E+00
Th-230	U-238	1.000E+00		9.955E-18	6.617E-17	3.329E-16	2.627E-15	1.565E-14	3.803E-14	0.000E+00 0.000E+00
Th-230	ΣDOSE(j)			1.169E-11	3.377E-11	7.592E-11	2.053E-10	4.443E-10	3.984E-10	0.000E+00 0.000E+00
0Ra-226	U-234	1.000E+00		2.095E-13	1.465E-12	7.605E-12	6.293E-11	4.188E-10	1.615E-09	0.000E+00 0.000E+00
Ra-226	U-238	1.000E+00		1.297E-19	1.945E-18	2.226E-17	5.409E-16	1.012E-14	1.141E-13	0.000E+00 0.000E+00
Ra-226	ΣDOSE(j)			2.095E-13	1.465E-12	7.605E-12	6.293E-11	4.188E-10	1.615E-09	0.000E+00 0.000E+00
0Pb-210	U-234	1.000E+00		6.268E-16	8.262E-15	8.595E-14	1.859E-12	2.825E-11	1.592E-10	0.000E+00 0.000E+00
Pb-210	U-238	1.000E+00		3.242E-22	8.784E-21	1.952E-19	1.232E-17	5.400E-16	9.679E-15	0.000E+00 0.000E+00
Pb-210	ΣDOSE(j)			6.268E-16	8.262E-15	8.595E-14	1.859E-12	2.825E-11	1.593E-10	0.000E+00 0.000E+00
0U-235	U-235	1.000E+00		1.514E-06	1.491E-06	1.444E-06	1.291E-06	9.319E-07	2.390E-07	0.000E+00 0.000E+00
0Pa-231	U-235	1.000E+00		2.795E-11	8.610E-11	1.959E-10	5.110E-10	9.624E-10	5.077E-10	0.000E+00 0.000E+00
0Ac-227	U-235	1.000E+00		5.093E-13	3.368E-12	1.644E-11	1.156E-10	5.128E-10	6.493E-10	0.000E+00 2.050E-09
0U-238	U-238	5.450E-07		5.190E-13	5.080E-13	4.866E-13	4.179E-13	2.667E-13	3.951E-14	0.000E+00 0.000E+00
U-238	U-238	1.000E+00		5.072E-06	4.985E-06	4.816E-06	4.263E-06	2.986E-06	7.031E-07	0.000E+00 0.000E+00
U-238	ΣDOSE(j)			5.072E-06	4.985E-06	4.816E-06	4.263E-06	2.986E-06	7.031E-07	0.000E+00 0.000E+00

THF(i) is the thread fraction of the parent nuclide.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Individual Nuclide Soil Concentration Parent Nuclide and Branch Fraction Indicated										
ONuclide	Parent	THF(i)	S(j,t), pCi/g							
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02 1.000E+03
U-234	U-234	1.000E+00		6.000E-05	5.912E-05	5.740E-05	5.176E-05	3.852E-05	1.370E-05	7.139E-07 2.307E-11
U-234	U-238	1.000E+00		0.000E+00	1.474E-10	4.295E-10	1.291E-09	2.882E-09	3.417E-09	5.344E-10 5.763E-14
U-234	ΣS(j):			6.000E-05	5.912E-05	5.740E-05	5.176E-05	3.852E-05	1.370E-05	7.144E-07 2.313E-11
0Th-230	U-234	1.000E+00		0.000E+00	5.477E-10	1.619E-09	5.129E-09	1.337E-08	2.879E-08	3.672E-08 3.661E-08
Th-230	U-238	1.000E+00		0.000E+00	6.813E-16	6.012E-15	6.238E-14	4.633E-13	2.738E-12	5.877E-12 6.191E-12
Th-230	ΣS(j):			0.000E+00	5.477E-10	1.619E-09	5.129E-09	1.337E-08	2.879E-08	3.673E-08 3.661E-08
0Ra-226	U-234	1.000E+00		0.000E+00	1.185E-13	1.048E-12	1.097E-11	8.348E-11	5.323E-10	1.305E-09 1.445E-09
Ra-226	U-238	1.000E+00		0.000E+00	9.835E-20	2.602E-18	8.981E-17	1.986E-15	3.747E-14	1.880E-13 2.444E-13
Ra-226	ΣS(j):			0.000E+00	1.185E-13	1.048E-12	1.097E-11	8.348E-11	5.323E-10	1.305E-09 1.446E-09
0Pb-210	U-234	1.000E+00		0.000E+00	1.224E-15	3.200E-14	1.061E-12	2.108E-11	2.972E-10	1.013E-09 1.169E-09
Pb-210	U-238	1.000E+00		0.000E+00	7.633E-22	5.991E-20	6.628E-18	3.952E-16	1.797E-14	1.401E-13 1.977E-13
Pb-210	ΣS(j):			0.000E+00	1.224E-15	3.200E-14	1.061E-12	2.108E-11	2.973E-10	1.013E-09 1.169E-09
0U-235	U-235	1.000E+00		3.900E-06	3.843E-06	3.731E-06	3.365E-06	2.504E-06	8.906E-07	4.644E-08 1.504E-12
0Pa-231	U-235	1.000E+00		0.000E+00	8.131E-11	2.368E-10	7.118E-10	1.589E-09	1.882E-09	2.939E-10 3.149E-14

0Ac-227	U-235	1.000E+00	0.000E+00	1.271E-12	1.072E-11	9.546E-11	4.738E-10	9.083E-10	1.632E-10	1.830E-14
0U-238	U-238	5.450E-07	2.888E-11	2.846E-11	2.763E-11	2.492E-11	1.855E-11	6.596E-12	3.440E-13	1.114E-17
U-238	U-238	1.000E+00	5.300E-05	5.222E-05	5.070E-05	4.572E-05	3.403E-05	1.210E-05	6.311E-07	2.044E-11
U-238	ΣS(j):		5.300E-05	5.222E-05	5.070E-05	4.572E-05	3.403E-05	1.210E-05	6.311E-07	2.044E-11

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 9.16 seconds

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Part III: Intake Quantities and Health Risk Factors

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Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	5
Time= 1.000E+00	8
Time= 3.000E+00	11
Time= 1.000E+01	14
Time= 3.000E+01	17
Time= 1.000E+02	20
Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTOR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTOR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 4

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	5.195E-01	5.192E-01	5.188E-01	5.169E-01	5.090E-01	4.061E-01	0.000E+00	0.000E+00
At-218	2.740E-11	5.070E-01	5.066E-01	5.059E-01	5.032E-01	4.932E-01	4.126E-01	0.000E+00	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	5.169E-01	5.167E-01	5.163E-01	5.145E-01	5.075E-01	4.337E-01	0.000E+00	0.000E+00
Bi-211	1.900E-07	4.875E-01	4.869E-01	4.855E-01	4.805E-01	4.622E-01	3.177E-01	0.000E+00	0.000E+00
Bi-214	7.340E-06	4.352E-01	4.342E-01	4.322E-01	4.248E-01	4.003E-01	2.579E-01	0.000E+00	0.000E+00
Bi-215	1.080E-06	4.749E-01	4.741E-01	4.726E-01	4.667E-01	4.462E-01	2.988E-01	0.000E+00	0.000E+00
Fr-223	1.350E-07	5.060E-01	5.056E-01	5.047E-01	5.013E-01	4.882E-01	3.630E-01	0.000E+00	0.000E+00
Hg-206	4.830E-07	4.908E-01	4.902E-01	4.889E-01	4.842E-01	4.667E-01	3.231E-01	0.000E+00	0.000E+00
Pa-231	1.270E-07	4.940E-01	4.934E-01	4.923E-01	4.878E-01	4.712E-01	3.299E-01	0.000E+00	0.000E+00
Pa-234	6.620E-06	4.590E-01	4.581E-01	4.563E-01	4.498E-01	4.273E-01	2.821E-01	0.000E+00	0.000E+00
Pa-234m	9.060E-08	4.683E-01	4.675E-01	4.659E-01	4.600E-01	4.398E-01	3.064E-01	0.000E+00	0.000E+00
Pb-210	1.480E-09	5.384E-01	5.384E-01	5.384E-01	5.384E-01	5.383E-01	5.262E-01	0.000E+00	0.000E+00
Pb-211	2.910E-07	4.702E-01	4.694E-01	4.678E-01	4.616E-01	4.402E-01	2.916E-01	0.000E+00	0.000E+00
Pb-214	9.940E-07	4.897E-01	4.891E-01	4.878E-01	4.830E-01	4.654E-01	3.219E-01	0.000E+00	0.000E+00
Po-210	4.510E-11	4.576E-01	4.568E-01	4.550E-01	4.483E-01	4.256E-01	2.802E-01	0.000E+00	0.000E+00
Po-211	3.760E-08	4.588E-01	4.579E-01	4.562E-01	4.496E-01	4.272E-01	2.818E-01	0.000E+00	0.000E+00
Po-214	3.850E-10	4.594E-01	4.585E-01	4.568E-01	4.502E-01	4.277E-01	2.809E-01	0.000E+00	0.000E+00
Po-215	7.480E-10	4.807E-01	4.799E-01	4.785E-01	4.730E-01	4.533E-01	3.068E-01	0.000E+00	0.000E+00
Po-218	6.840E-15	5.225E-01	5.225E-01	5.225E-01	5.224E-01	5.208E-01	4.607E-01	0.000E+00	0.000E+00
Ra-223	4.550E-07	5.029E-01	5.024E-01	5.015E-01	4.979E-01	4.840E-01	3.519E-01	0.000E+00	0.000E+00
Ra-226	2.500E-08	5.061E-01	5.057E-01	5.049E-01	5.015E-01	4.886E-01	3.569E-01	0.000E+00	0.000E+00
Rn-218	3.390E-09	4.681E-01	4.673E-01	4.656E-01	4.594E-01	4.380E-01	2.907E-01	0.000E+00	0.000E+00
Rn-219	2.350E-07	4.899E-01	4.893E-01	4.880E-01	4.832E-01	4.656E-01	3.219E-01	0.000E+00	0.000E+00
Rn-222	1.690E-09	4.770E-01	4.762E-01	4.747E-01	4.689E-01	4.485E-01	3.005E-01	0.000E+00	0.000E+00
Th-227	4.450E-07	4.983E-01	4.978E-01	4.967E-01	4.926E-01	4.773E-01	3.392E-01	0.000E+00	0.000E+00
Th-230	8.450E-10	5.202E-01	5.200E-01	5.197E-01	5.185E-01	5.126E-01	4.175E-01	0.000E+00	0.000E+00
Th-231	2.490E-08	5.332E-01	5.330E-01	5.327E-01	5.314E-01	5.256E-01	4.330E-01	0.000E+00	0.000E+00
Th-234	1.780E-08	5.204E-01	5.203E-01	5.202E-01	5.196E-01	5.160E-01	4.335E-01	0.000E+00	0.000E+00
Tl-206	6.110E-09	5.148E-01	5.145E-01	5.140E-01	5.120E-01	5.045E-01	4.319E-01	0.000E+00	0.000E+00
Tl-207	1.590E-08	4.838E-01	4.832E-01	4.819E-01	4.771E-01	4.602E-01	3.407E-01	0.000E+00	0.000E+00
Tl-210	1.340E-05	4.400E-01	4.391E-01	4.371E-01	4.299E-01	4.058E-01	2.634E-01	0.000E+00	0.000E+00
U-234	2.530E-10	5.332E-01	5.331E-01	5.328E-01	5.316E-01	5.263E-01	4.454E-01	0.000E+00	0.000E+00
U-235	5.510E-07	5.068E-01	5.064E-01	5.055E-01	5.023E-01	4.896E-01	3.587E-01	0.000E+00	0.000E+00
U-238	1.240E-10	5.147E-01	5.143E-01	5.136E-01	5.107E-01	5.001E-01	4.030E-01	0.000E+00	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 5

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	1.479E-03	2.175E-03	6.790E-04	1.732E-03	1.980E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.566E-03
U-235	9.615E-10	1.414E-04	4.414E-05	1.126E-04	1.287E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.268E-04
U-238	1.307E-08	1.921E-03	5.998E-04	1.530E-03	1.749E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.800E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.311E-15	0.0000	1.954E-19	0.0000	8.977E-17	0.0000	5.833E-18	0.0000	2.344E-18	0.0000	8.019E-17	0.0000
Pa-231	1.329E-15	0.0000	3.618E-19	0.0000	6.293E-16	0.0000	8.364E-16	0.0000	1.209E-18	0.0000	1.434E-16	0.0000
Pb-210	2.294E-19	0.0000	6.742E-22	0.0000	4.515E-17	0.0000	9.651E-18	0.0000	5.049E-18	0.0000	1.008E-17	0.0000
Ra-226	2.093E-15	0.0000	3.601E-21	0.0000	1.540E-16	0.0000	1.583E-17	0.0000	2.113E-17	0.0000	8.793E-18	0.0000
Th-230	7.191E-17	0.0000	1.226E-18	0.0000	2.531E-16	0.0000	5.659E-17	0.0000	4.170E-18	0.0000	5.737E-16	0.0000
U-234	1.740E-13	0.0015	8.164E-15	0.0001	4.122E-12	0.0358	1.287E-12	0.0112	3.280E-12	0.0285	3.749E-12	0.0325
U-235	2.435E-11	0.2114	4.771E-16	0.0000	2.738E-13	0.0024	8.553E-14	0.0007	2.179E-13	0.0019	2.491E-13	0.0022
U-238	6.352E-11	0.5514	6.136E-15	0.0001	4.597E-12	0.0399	1.436E-12	0.0125	3.658E-12	0.0318	4.181E-12	0.0363

Total 8.805E-11 0.7643 1.478E-14 0.0001 8.993E-12 0.0781 2.810E-12 0.0244 7.156E-12 0.0621 8.180E-12 0.0710
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 6
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.490E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.939E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.016E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.293E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.607E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-11	0.1095
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.518E-11	0.2185
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.740E-11	0.6718
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.152E-10	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.762E-13	0.0015	8.165E-15	0.0001	0.000E+00	0.0000	4.122E-12	0.0358	1.287E-12	0.0112	3.280E-12	0.0285	3.749E-12	0.0325

U-235	2.435E-11	0.2114	4.777E-16	0.0000	0.000E+00	0.0000	2.745E-13	0.0024	8.637E-14	0.0007	2.179E-13	0.0019	2.493E-13	0.0022
U-238	6.352E-11	0.5514	6.136E-15	0.0001	0.000E+00	0.0000	4.597E-12	0.0399	1.436E-12	0.0125	3.658E-12	0.0318	4.181E-12	0.0363
Total	8.805E-11	0.7643	1.478E-14	0.0001	0.000E+00	0.0000	8.993E-12	0.0781	2.810E-12	0.0244	7.156E-12	0.0621	8.180E-12	0.0710

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 7
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.262E-11	0.1096
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.518E-11	0.2186
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.740E-11	0.6718
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.152E-10	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 8
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.114E-16	5.540E-11	2.609E-11	1.246E-12	4.167E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.244E-10
Pa-231	1.991E-14	1.141E-08	1.456E-08	2.800E-11	2.665E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.866E-08
Pb-210	2.998E-19	2.283E-13	4.636E-14	2.293E-14	4.012E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.378E-13
Ra-226	2.902E-17	6.369E-11	5.657E-12	8.449E-12	3.884E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.168E-11
Th-230	1.341E-13	8.307E-09	2.000E-09	1.702E-10	1.795E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.843E-08
U-234	1.448E-08	2.130E-03	6.655E-04	1.695E-03	1.938E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.429E-03
U-235	9.411E-10	1.385E-04	4.326E-05	1.102E-04	1.260E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.179E-04
U-238	1.279E-08	1.882E-03	5.878E-04	1.498E-03	1.712E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.679E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	3.625E-15	0.0000	2.131E-19	0.0000	9.785E-17	0.0000	6.237E-18	0.0000	2.556E-18	0.0000	8.744E-17	0.0000				
Pa-231	1.415E-15	0.0000	3.839E-19	0.0000	6.678E-16	0.0000	8.877E-16	0.0000	1.283E-18	0.0000	1.522E-16	0.0000				
Pb-210	2.635E-19	0.0000	7.700E-22	0.0000	5.154E-17	0.0000	1.102E-17	0.0000	5.764E-18	0.0000	1.151E-17	0.0000				
Ra-226	2.325E-15	0.0000	3.985E-21	0.0000	1.705E-16	0.0000	1.752E-17	0.0000	2.339E-17	0.0000	9.731E-18	0.0000				
Th-230	7.704E-17	0.0000	1.308E-18	0.0000	2.699E-16	0.0000	6.033E-17	0.0000	4.443E-18	0.0000	6.117E-16	0.0000				
U-234	1.714E-13	0.0015	7.986E-15	0.0001	4.032E-12	0.0356	1.259E-12	0.0111	3.209E-12	0.0283	3.667E-12	0.0324				
U-235	2.397E-11	0.2117	4.667E-16	0.0000	2.679E-13	0.0024	8.367E-14	0.0007	2.132E-13	0.0019	2.436E-13	0.0022				
U-238	6.248E-11	0.5520	6.002E-15	0.0001	4.496E-12	0.0397	1.405E-12	0.0124	3.578E-12	0.0316	4.090E-12	0.0361				
Total	8.663E-11	0.7653	1.446E-14	0.0001	8.798E-12	0.0777	2.749E-12	0.0243	7.000E-12	0.0618	8.001E-12	0.0707				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.820E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.124E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.009E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.546E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.025E-15	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.235E-11	0.1091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.478E-11	0.2189
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.606E-11	0.6719
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.132E-10	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.738E-13	0.0015	7.987E-15	0.0001	0.000E+00	0.0000	4.032E-12	0.0356	1.259E-12	0.0111	3.208E-12	0.0283	3.668E-12	0.0324
U-235	2.397E-11	0.2118	4.673E-16	0.0000	0.000E+00	0.0000	2.686E-13	0.0024	8.456E-14	0.0007	2.132E-13	0.0019	2.439E-13	0.0022
U-238	6.248E-11	0.5520	6.003E-15	0.0001	0.000E+00	0.0000	4.497E-12	0.0397	1.405E-12	0.0124	3.578E-12	0.0316	4.090E-12	0.0361
Total	8.663E-11	0.7653	1.446E-14	0.0001	0.000E+00	0.0000	8.798E-12	0.0777	2.749E-12	0.0243	7.000E-12	0.0618	8.001E-12	0.0707

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 10

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.235E-11	0.1091
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.478E-11	0.2189
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.606E-11	0.6719
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.132E-10	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 11

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.591E-15	4.097E-10	8.324E-11	1.021E-11	3.468E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.500E-10
Pa-231	5.722E-14	3.338E-08	4.389E-08	6.895E-11	7.658E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.499E-08
Pb-210	7.733E-18	5.031E-12	1.074E-12	5.448E-13	1.035E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.685E-12
Ra-226	2.533E-16	5.825E-10	5.743E-11	7.911E-11	3.390E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.529E-10
Th-230	3.912E-13	2.341E-08	5.350E-09	4.126E-10	5.235E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.153E-08
U-234	1.387E-08	2.041E-03	6.374E-04	1.624E-03	1.856E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.158E-03
U-235	9.015E-10	1.326E-04	4.143E-05	1.056E-04	1.206E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.003E-04
U-238	1.225E-08	1.803E-03	5.631E-04	1.435E-03	1.640E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.440E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.288E-15	0.0000	2.500E-19	0.0000	1.147E-16	0.0000	7.022E-18	0.0000	2.999E-18	0.0000	1.026E-16	0.0000
Pa-231	1.579E-15	0.0000	4.246E-19	0.0000	7.389E-16	0.0000	9.826E-16	0.0000	1.415E-18	0.0000	1.683E-16	0.0000
Pb-210	3.419E-19	0.0000	9.878E-22	0.0000	6.605E-17	0.0000	1.412E-17	0.0000	7.389E-18	0.0000	1.476E-17	0.0000
Ra-226	2.830E-15	0.0000	4.815E-21	0.0000	2.060E-16	0.0000	2.119E-17	0.0000	2.828E-17	0.0000	1.176E-17	0.0000
Th-230	8.705E-17	0.0000	1.462E-18	0.0000	3.017E-16	0.0000	6.738E-17	0.0000	4.953E-18	0.0000	6.841E-16	0.0000
U-234	1.663E-13	0.0015	7.641E-15	0.0001	3.857E-12	0.0353	1.205E-12	0.0110	3.070E-12	0.0281	3.508E-12	0.0321
U-235	2.322E-11	0.2125	4.465E-16	0.0000	2.563E-13	0.0023	8.005E-14	0.0007	2.039E-13	0.0019	2.331E-13	0.0021
U-238	6.045E-11	0.5533	5.743E-15	0.0001	4.302E-12	0.0394	1.344E-12	0.0123	3.423E-12	0.0313	3.913E-12	0.0358

Total 8.384E-11 0.7674 1.383E-14 0.0001 8.417E-12 0.0770 2.630E-12 0.0241 6.697E-12 0.0613 7.655E-12 0.0701
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 12
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.516E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.470E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.027E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.097E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.147E-15	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.181E-11	0.1081
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.399E-11	0.2196
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.344E-11	0.6722
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.093E-10	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.692E-13	0.0015	7.642E-15	0.0001	0.000E+00	0.0000	3.858E-12	0.0353	1.205E-12	0.0110	3.070E-12	0.0281	3.509E-12	0.0321

U-235	2.322E-11	0.2126	4.472E-16	0.0000	0.000E+00	0.0000	2.571E-13	0.0024	8.104E-14	0.0007	2.039E-13	0.0019	2.333E-13	0.0021
U-238	6.045E-11	0.5533	5.743E-15	0.0001	0.000E+00	0.0000	4.302E-12	0.0394	1.344E-12	0.0123	3.423E-12	0.0313	3.913E-12	0.0358
Total	8.384E-11	0.7674	1.383E-14	0.0001	0.000E+00	0.0000	8.417E-12	0.0770	2.630E-12	0.0241	6.697E-12	0.0613	7.655E-12	0.0701

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 13
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-11	0.1082
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.400E-11	0.2197
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.344E-11	0.6722
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.093E-10	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 14
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.197E-14	3.316E-09	2.813E-10	8.604E-11	2.940E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.624E-09
Pa-231	1.638E-13	9.615E-08	1.277E-07	1.858E-10	2.192E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.459E-07
Pb-210	2.441E-16	1.485E-10	3.178E-11	1.652E-11	3.267E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.295E-10
Ra-226	2.525E-15	5.902E-09	6.028E-10	8.085E-10	3.379E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.651E-09
Th-230	1.180E-12	6.977E-08	1.563E-08	1.156E-09	1.579E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.445E-07
U-234	1.191E-08	1.753E-03	5.475E-04	1.395E-03	1.594E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.289E-03
U-235	7.742E-10	1.139E-04	3.559E-05	9.066E-05	1.036E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.438E-04
U-238	1.052E-08	1.548E-03	4.836E-04	1.232E-03	1.408E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.672E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

[illegible]

0

0

0

Radio- Nuclide												
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	6.773E-15	0.0001	3.823E-19	0.0000	1.749E-16	0.0000	9.412E-18	0.0000	4.584E-18	0.0000	1.569E-16	0.0000
Pa-231	2.058E-15	0.0000	5.347E-19	0.0000	9.309E-16	0.0000	1.239E-15	0.0000	1.771E-18	0.0000	2.119E-16	0.0000
Pb-210	7.393E-19	0.0000	2.049E-21	0.0000	1.366E-16	0.0000	2.918E-17	0.0000	1.530E-17	0.0000	3.061E-17	0.0000
Ra-226	4.976E-15	0.0001	8.237E-21	0.0000	3.528E-16	0.0000	3.636E-17	0.0000	4.844E-17	0.0000	2.012E-17	0.0000
Th-230	1.196E-16	0.0000	1.926E-18	0.0000	3.970E-16	0.0000	8.850E-17	0.0000	6.480E-18	0.0000	9.012E-16	0.0000
U-234	1.494E-13	0.0015	6.532E-15	0.0001	3.298E-12	0.0342	1.030E-12	0.0107	2.624E-12	0.0272	3.000E-12	0.0311
U-235	2.076E-11	0.2153	3.817E-16	0.0000	2.191E-13	0.0023	6.844E-14	0.0007	1.744E-13	0.0018	1.993E-13	0.0021
U-238	5.378E-11	0.5577	4.910E-15	0.0001	3.678E-12	0.0381	1.149E-12	0.0119	2.927E-12	0.0303	3.345E-12	0.0347
Total	7.471E-11	0.7747	1.183E-14	0.0001	7.197E-12	0.0746	2.249E-12	0.0233	5.726E-12	0.0594	6.545E-12	0.0679

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.545E-13	0.0016	6.534E-15	0.0001	0.000E+00	0.0000	3.299E-12	0.0342	1.030E-12	0.0107	2.624E-12	0.0272	3.000E-12	0.0311
U-235	2.077E-11	0.2154	3.827E-16	0.0000	0.000E+00	0.0000	2.202E-13	0.0023	6.969E-14	0.0007	1.744E-13	0.0018	1.996E-13	0.0021
U-238	5.378E-11	0.5577	4.910E-15	0.0001	0.000E+00	0.0000	3.678E-12	0.0381	1.149E-12	0.0119	2.927E-12	0.0304	3.345E-12	0.0347
Total	7.471E-11	0.7747	1.183E-14	0.0001	0.000E+00	0.0000	7.197E-12	0.0746	2.249E-12	0.0233	5.726E-12	0.0594	6.545E-12	0.0679

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 16

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.011E-11	0.1049
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.143E-11	0.2223
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.489E-11	0.6729
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.644E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 17

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	9.346E-14	1.392E-08	6.796E-10	3.654E-10	1.251E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.747E-08
Pa-231	3.134E-13	1.843E-07	2.455E-07	3.493E-10	4.194E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.721E-07
Pb-210	4.158E-15	2.479E-09	5.295E-10	2.778E-10	5.564E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.842E-09
Ra-226	1.647E-14	3.867E-08	3.989E-09	5.311E-09	2.204E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.017E-08
Th-230	2.636E-12	1.553E-07	3.459E-08	2.527E-09	3.529E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.453E-07
U-234	7.598E-09	1.118E-03	3.493E-04	8.898E-04	1.017E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.374E-03
U-235	4.939E-10	7.268E-05	2.270E-05	5.784E-05	6.610E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.193E-04
U-238	6.712E-09	9.877E-04	3.085E-04	7.860E-04	8.983E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.981E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.279E-14	0.0002	6.446E-19	0.0000	2.938E-16	0.0000	1.287E-17	0.0000	7.726E-18	0.0000	2.645E-16	0.0000
Pa-231	2.788E-15	0.0000	6.433E-19	0.0000	1.121E-15	0.0000	1.493E-15	0.0000	2.118E-18	0.0000	2.550E-16	0.0000
Pb-210	3.047E-18	0.0000	7.312E-21	0.0000	4.852E-16	0.0000	1.036E-16	0.0000	5.443E-17	0.0000	1.093E-16	0.0000
Ra-226	1.308E-14	0.0002	1.971E-20	0.0000	8.454E-16	0.0000	8.736E-17	0.0000	1.162E-16	0.0000	4.814E-17	0.0000
Th-230	1.934E-16	0.0000	2.691E-18	0.0000	5.541E-16	0.0000	1.233E-16	0.0000	8.990E-18	0.0000	1.259E-15	0.0000
U-234	1.096E-13	0.0016	4.101E-15	0.0001	2.071E-12	0.0310	6.468E-13	0.0097	1.648E-12	0.0246	1.883E-12	0.0282
U-235	1.493E-11	0.2233	2.397E-16	0.0000	1.376E-13	0.0021	4.297E-14	0.0006	1.095E-13	0.0016	1.251E-13	0.0019
U-238	3.815E-11	0.5705	3.082E-15	0.0000	2.309E-12	0.0345	7.213E-13	0.0108	1.838E-12	0.0275	2.100E-12	0.0314

Total 5.322E-11 0.7959 7.427E-15 0.0001 4.521E-12 0.0676 1.413E-12 0.0211 3.595E-12 0.0538 4.110E-12 0.0615
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 18
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.337E-14	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.659E-15	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.555E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.418E-14	0.0002
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.142E-15	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.362E-12	0.0951
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.535E-11	0.2296
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.512E-11	0.6748
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.687E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	1.229E-13	0.0018	4.103E-15	0.0001	0.000E+00	0.0000	2.072E-12	0.0310	6.471E-13	0.0097	1.648E-12	0.0246	1.884E-12	0.0282

U-235	1.495E-11	0.2236	2.410E-16	0.0000	0.000E+00	0.0000	1.390E-13	0.0021	4.448E-14	0.0007	1.095E-13	0.0016	1.256E-13	0.0019
U-238	3.815E-11	0.5705	3.083E-15	0.0000	0.000E+00	0.0000	2.309E-12	0.0345	7.214E-13	0.0108	1.838E-12	0.0275	2.100E-12	0.0314
Total	5.322E-11	0.7959	7.427E-15	0.0001	0.000E+00	0.0000	4.521E-12	0.0676	1.413E-12	0.0211	3.595E-12	0.0538	4.110E-12	0.0615

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 19
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.378E-12	0.0954
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.537E-11	0.2298
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.512E-11	0.6748
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.687E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 20
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESE.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	7.465E-14	1.107E-08	4.134E-10	2.917E-10	9.991E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.177E-08
Pa-231	1.547E-13	9.107E-08	1.215E-07	1.714E-10	2.070E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.334E-07
Pb-210	2.443E-14	1.447E-08	3.090E-09	1.625E-09	3.270E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.245E-08
Ra-226	4.375E-14	1.029E-07	1.067E-08	1.415E-08	5.855E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.336E-07
Th-230	2.366E-12	1.393E-07	3.097E-08	2.251E-09	3.166E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.891E-07
U-234	1.126E-09	1.658E-04	5.180E-05	1.319E-04	1.507E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.001E-04
U-235	7.319E-11	1.077E-05	3.367E-06	8.572E-06	9.796E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.251E-05
U-238	9.947E-10	1.464E-04	4.575E-05	1.165E-04	1.331E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.418E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide												
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.011E-14	0.0007	2.940E-19	0.0000	1.338E-16	0.0000	4.940E-18	0.0000	3.523E-18	0.0000	1.206E-16	0.0000
Pa-231	1.595E-15	0.0001	2.132E-19	0.0000	3.717E-16	0.0000	4.960E-16	0.0000	6.992E-19	0.0000	8.448E-17	0.0000
Pb-210	1.754E-17	0.0000	1.738E-20	0.0000	1.149E-15	0.0001	2.455E-16	0.0000	1.291E-16	0.0000	2.597E-16	0.0000
Ra-226	2.932E-14	0.0021	2.705E-20	0.0000	1.162E-15	0.0001	1.205E-16	0.0000	1.598E-16	0.0000	6.607E-17	0.0000
Th-230	2.409E-16	0.0000	1.620E-18	0.0000	3.334E-16	0.0000	7.414E-17	0.0000	5.387E-18	0.0000	7.579E-16	0.0001
U-234	3.011E-14	0.0022	5.117E-16	0.0000	2.585E-13	0.0186	8.079E-14	0.0058	2.056E-13	0.0148	2.350E-13	0.0169
U-235	3.407E-12	0.2448	2.990E-17	0.0000	1.717E-14	0.0012	5.367E-15	0.0004	1.366E-14	0.0010	1.561E-14	0.0011
U-238	8.732E-12	0.6274	3.846E-16	0.0000	2.883E-13	0.0207	9.010E-14	0.0065	2.293E-13	0.0165	2.620E-13	0.0188
Total	1.221E-11	0.8773	9.284E-16	0.0001	5.671E-13	0.0407	1.772E-13	0.0127	4.489E-13	0.0322	5.139E-13	0.0369

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.037E-14	0.0007
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.549E-15	0.0002
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.801E-15	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.083E-14	0.0022
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.413E-15	0.0001
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.105E-13	0.0582
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.459E-12	0.2485
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.603E-12	0.6899
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.392E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.968E-14	0.0043	5.132E-16	0.0000	0.000E+00	0.0000	2.611E-13	0.0188	8.121E-14	0.0058	2.059E-13	0.0148	2.360E-13	0.0170
U-235	3.419E-12	0.2456	3.041E-17	0.0000	0.000E+00	0.0000	1.768E-14	0.0013	5.868E-15	0.0004	1.366E-14	0.0010	1.582E-14	0.0011
U-238	8.732E-12	0.6274	3.847E-16	0.0000	0.000E+00	0.0000	2.884E-13	0.0207	9.012E-14	0.0065	2.294E-13	0.0165	2.621E-13	0.0188
Total	1.221E-11	0.8773	9.284E-16	0.0001	0.000E+00	0.0000	5.671E-13	0.0407	1.772E-13	0.0127	4.489E-13	0.0322	5.139E-13	0.0369

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 22

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.443E-13	0.0607
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.472E-12	0.2494
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.603E-12	0.6899
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.392E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 23

Intrisk : Shiprock GW Evap. Pond_Offsite Res. Location E_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

[illegible]

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of Radon and its Decay Products as pCi/yr at t= 3.000E+02 years

Radionuclides

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

[illegible]

U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 25
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 26
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.173E-06	0.000E+00	9.007E-08	4.983E-10	1.096E-09	1.264E-06
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 27

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport Post-Rem.

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.904E-14	0.9050	0.000E+00	0.0000	1.962E-15	0.0933	1.086E-17	0.0005	2.388E-17	0.0011	2.103E-14	1.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.904E-14	0.9050	0.000E+00	0.0000	1.962E-15	0.0933	1.086E-17	0.0005	2.388E-17	0.0011	2.103E-14	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:34 Page 28

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location E_Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	1.904E-14	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	1.962E-15	0.0933	1.086E-17	0.0005	2.388E-17	0.0011	2.103E-14	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	1.904E-14	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	1.962E-15	0.0933	1.086E-17	0.0005	2.388E-17	0.0011	2.103E-14	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Time = 3.000E+00	14
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 Summary : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary
 Dose Library: DCFPAK3.02 (Adult)

Menu	Parameter	Current Value#	Base Case*	Parameter Name
A-1	DCF's for external ground radiation, (mrem/yr)/(pCi/g)			
A-1	Ac-227 (Source: DCFPAK3.02)	2.615E-04	2.615E-04	DCF1(1)
A-1	At-218 (Source: DCFPAK3.02)	5.567E-05	5.567E-05	DCF1(2)
A-1	At-219 (Source: DCFPAK3.02)	0.000E+00	0.000E+00	DCF1(3)
A-1	Bi-210 (Source: DCFPAK3.02)	5.473E-03	5.473E-03	DCF1(4)
A-1	Bi-211 (Source: DCFPAK3.02)	2.410E-01	2.410E-01	DCF1(5)
A-1	Bi-214 (Source: DCFPAK3.02)	9.135E+00	9.135E+00	DCF1(6)
A-1	Bi-215 (Source: DCFPAK3.02)	1.369E+00	1.369E+00	DCF1(7)
A-1	Fr-223 (Source: DCFPAK3.02)	1.758E-01	1.758E-01	DCF1(8)
A-1	Hg-206 (Source: DCFPAK3.02)	6.127E-01	6.127E-01	DCF1(9)
A-1	Pa-231 (Source: DCFPAK3.02)	1.608E-01	1.608E-01	DCF1(10)
A-1	Pa-234 (Source: DCFPAK3.02)	8.275E+00	8.275E+00	DCF1(11)
A-1	Pa-234m (Source: DCFPAK3.02)	1.257E-01	1.257E-01	DCF1(12)
A-1	Pb-210 (Source: DCFPAK3.02)	2.092E-03	2.092E-03	DCF1(13)
A-1	Pb-211 (Source: DCFPAK3.02)	3.680E-01	3.680E-01	DCF1(14)

A-1	Pb-214	(Source: DCFPAK3.02)	1.257E+00	1.257E+00	DCF1(15)
A-1	Po-210	(Source: DCFPAK3.02)	5.641E-05	5.641E-05	DCF1(16)
A-1	Po-211	(Source: DCFPAK3.02)	4.707E-02	4.707E-02	DCF1(17)
A-1	Po-214	(Source: DCFPAK3.02)	4.801E-04	4.801E-04	DCF1(18)
A-1	Po-215	(Source: DCFPAK3.02)	9.452E-04	9.452E-04	DCF1(19)
A-1	Po-218	(Source: DCFPAK3.02)	9.228E-09	9.228E-09	DCF1(20)
A-1	Ra-223	(Source: DCFPAK3.02)	5.791E-01	5.791E-01	DCF1(21)
A-1	Ra-226	(Source: DCFPAK3.02)	3.176E-02	3.176E-02	DCF1(22)
A-1	Rn-218	(Source: DCFPAK3.02)	4.259E-03	4.259E-03	DCF1(23)
A-1	Rn-219	(Source: DCFPAK3.02)	2.970E-01	2.970E-01	DCF1(24)
A-1	Rn-222	(Source: DCFPAK3.02)	2.130E-03	2.130E-03	DCF1(25)
A-1	Th-227	(Source: DCFPAK3.02)	5.641E-01	5.641E-01	DCF1(26)
A-1	Th-230	(Source: DCFPAK3.02)	1.106E-03	1.106E-03	DCF1(27)
A-1	Th-231	(Source: DCFPAK3.02)	3.250E-02	3.250E-02	DCF1(28)
A-1	Th-234	(Source: DCFPAK3.02)	2.316E-02	2.316E-02	DCF1(29)
A-1	Tl-206	(Source: DCFPAK3.02)	1.278E-02	1.278E-02	DCF1(30)
A-1	Tl-207	(Source: DCFPAK3.02)	2.391E-02	2.391E-02	DCF1(31)
A-1	Tl-210	(Source: DCFPAK3.02)	1.677E+01	1.677E+01	DCF1(32)
A-1	U-234	(Source: DCFPAK3.02)	3.456E-04	3.456E-04	DCF1(33)
A-1	U-235	(Source: DCFPAK3.02)	7.005E-01	7.005E-01	DCF1(34)
A-1	U-238	(Source: DCFPAK3.02)	1.713E-04	1.713E-04	DCF1(35)
B-1	Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D		6.459E-01	5.760E-01	DCF2(1)
B-1	Pa-231		8.505E-01	8.505E-01	DCF2(2)
B-1	Pb-210+D		3.708E-02	2.077E-02	DCF2(3)
B-1	Ra-226+D		3.528E-02	3.517E-02	DCF2(4)
B-1	Th-230		3.759E-01	3.759E-01	DCF2(5)
B-1	U-234		3.479E-02	3.479E-02	DCF2(6)
B-1	U-235+D		3.132E-02	3.132E-02	DCF2(7)
B-1	U-238		2.973E-02	2.973E-02	DCF2(8)
B-1	U-238+D		2.976E-02	2.973E-02	DCF2(9)
D-1	Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D		1.607E-03	1.191E-03	DCF3(1)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-1	Pa-231	1.772E-03	1.772E-03	DCF3(2)
D-1	Pb-210+D	7.057E-03	2.575E-03	DCF3(3)
D-1	Ra-226+D	1.037E-03	1.036E-03	DCF3(4)
D-1	Th-230	7.918E-04	7.918E-04	DCF3(5)
D-1	U-234	1.831E-04	1.831E-04	DCF3(6)
D-1	U-235+D	1.740E-04	1.728E-04	DCF3(7)

D-1	U-238	1.650E-04	1.650E-04	DCF3 (8)
D-1	U-238+D	1.776E-04	1.650E-04	DCF3 (9)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF (1,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (2,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF (2,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (2,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF (3,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF (3,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF (3,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF (4,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF (4,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF (5,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF (5,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF (5,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (6,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (6,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (6,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (7,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (7,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (7,3)
D-34				
D-34	U-238 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (8,1)
D-34	U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (8,2)
D-34	U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (8,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF (9,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF (9,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF (9,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC (1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC (1,2)
D-5				

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.
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Dose Conversion Factor (and Related) Parameter Summary (continued)
Dose Library: DCFPAK3.02 (Adult)

0 Menu	Parameter	Current Value#	Base Case*	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC (2,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC (2,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC (3,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC (3,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC (4,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC (4,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC (5,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC (5,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC (6,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (6,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC (7,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (7,2)
D-5				
D-5	U-238 , fish	1.000E+01	1.000E+01	BIOFAC (8,1)
D-5	U-238 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (8,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC (9,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC (9,2)

#For DCF1(xxx) only, factors are for infinite depth & area. See ETFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport Post-Rem.

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Site-Specific Parameter Summary					
0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)	2.500E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	1.500E-01	2.000E+00	---	THICK0
R011	Fraction of contamination that is submerged	0.000E+00	0.000E+00	---	SUBMFRACT
R011	Length parallel to aquifer flow (m)	1.800E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	2.500E+01	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)
R011	Times for calculations (yr)	3.000E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	1.000E+02	1.000E+02	---	T(6)
R011	Times for calculations (yr)	3.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	1.000E+03	1.000E+03	---	T(8)

R011	Times for calculations (yr)	not used	0.000E+00	---	T (9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): U-234	2.500E-05	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g): U-235	1.600E-06	0.000E+00	---	S1(7)
R012	Initial principal radionuclide (pCi/g): U-238	2.200E-05	0.000E+00	---	S1(8)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1 (6)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1 (7)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1 (8)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	1.000E-03	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.260E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	5.000E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.670E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	2.000E-01	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(7)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(7,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.670E-02	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.477E-02	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

0	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
Menu					

R016	Distribution coefficients for daughter Pb-210					
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCC (3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCU (3,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---		DCNUCS (3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.399E-03		ALEACH (3)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (3)
R016	Distribution coefficients for daughter Ra-226					
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCC (4)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCU (4,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---		DCNUCS (4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.056E-02		ALEACH (4)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (4)
R016	Distribution coefficients for daughter Th-230					
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCC (5)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCU (5,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---		DCNUCS (5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.236E-05		ALEACH (5)
R016	Solubility constant	0.000E+00	0.000E+00	not used		SOLUBK (5)
R017	Inhalation rate (m**3/yr)	7.007E+03	8.400E+03	---		INHALR
R017	Mass loading for inhalation (g/m**3)	7.000E-07	1.000E-04	---		MLINH
R017	Exposure duration	2.600E+01	3.000E+01	---		ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---		SHF3
R017	Shielding factor, external gamma	7.000E-01	7.000E-01	---		SHF1
R017	Fraction of time spent indoors	6.550E-01	5.000E-01	---		FIND
R017	Fraction of time spent outdoors (on site)	7.990E-02	2.500E-01	---		FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.		FS
R017	Radii of shape factor array (used if FS = -1):					
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---		RAD_SHAPE (1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---		RAD_SHAPE (2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---		RAD_SHAPE (3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---		RAD_SHAPE (4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---		RAD_SHAPE (5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---		RAD_SHAPE (6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---		RAD_SHAPE (7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---		RAD_SHAPE (8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---		RAD_SHAPE (9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---		RAD_SHAPE (10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---		RAD_SHAPE (11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---		RAD_SHAPE (12)

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.
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Site-Specific Parameter Summary (continued)

0		User	Used by RESRAD	Parameter
Menu	Parameter	Input	Default (If different from user input)	Name

R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA (1)
R017	Ring 2	not used	2.732E-01	---	FRACA (2)
R017	Ring 3	not used	0.000E+00	---	FRACA (3)
R017	Ring 4	not used	0.000E+00	---	FRACA (4)
R017	Ring 5	not used	0.000E+00	---	FRACA (5)
R017	Ring 6	not used	0.000E+00	---	FRACA (6)
R017	Ring 7	not used	0.000E+00	---	FRACA (7)
R017	Ring 8	not used	0.000E+00	---	FRACA (8)
R017	Ring 9	not used	0.000E+00	---	FRACA (9)
R017	Ring 10	not used	0.000E+00	---	FRACA (10)
R017	Ring 11	not used	0.000E+00	---	FRACA (11)
R017	Ring 12	not used	0.000E+00	---	FRACA (12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.600E+02	1.600E+02	---	DIET (1)
R018	Leafy vegetable consumption (kg/yr)	1.400E+01	1.400E+01	---	DIET (2)
R018	Milk consumption (L/yr)	9.200E+01	9.200E+01	---	DIET (3)
R018	Meat and poultry consumption (kg/yr)	6.300E+01	6.300E+01	---	DIET (4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET (5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET (6)
R018	Soil ingestion rate (g/yr)	4.490E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	5.100E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	7.000E-07	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV (1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV (2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV (3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE (1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE (2)

R19B | Growing Season for Fodder (years) | 8.000E-02 | 8.000E-02 | --- | TE(3)
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 Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.
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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL

R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA (1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA (2)
TITL	Number of graphical time points	32	---	---	NPTS

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	257	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	suppressed
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area:	25000.00 square meters	U-234	2.500E-05
Thickness:	0.15 meters	U-235	1.600E-06
Cover Depth:	0.00 meters	U-238	2.200E-05

0

Total Dose TDOSE(t), mrem/yr

Basic Radiation Dose Limit = 2.500E+01 mrem/yr
 Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
 TDOSE(t): 3.227E-06 3.171E-06 3.061E-06 2.703E-06 1.880E-06 4.297E-07 0.000E+00 8.410E-10
 M(t): 1.291E-07 1.268E-07 1.224E-07 1.081E-07 7.521E-08 1.719E-08 0.000E+00 3.364E-11
 0Maximum TDOSE(t): 3.227E-06 mrem/yr at t = 0.000E+00 years
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.573E-09	0.0014	2.122E-10	0.0001	0.000E+00	0.0000	1.643E-07	0.0509	5.132E-08	0.0159	1.308E-07	0.0405	1.495E-07	0.0463
U-235	5.911E-07	0.1832	1.223E-11	0.0000	0.000E+00	0.0000	9.997E-09	0.0031	3.126E-09	0.0010	7.953E-09	0.0025	9.091E-09	0.0028
U-238	1.682E-06	0.5212	1.597E-10	0.0000	0.000E+00	0.0000	1.402E-07	0.0434	4.379E-08	0.0136	1.116E-07	0.0346	1.275E-07	0.0395
Total	2.278E-06	0.7058	3.841E-10	0.0001	0.000E+00	0.0000	3.145E-07	0.0975	9.824E-08	0.0304	2.503E-07	0.0776	2.861E-07	0.0886

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.007E-07	0.1551
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.213E-07	0.1925
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.105E-06	0.6524
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.227E-06	1.0000

0*Sum of all water independent and dependent pathways.

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 Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.
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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.505E-09	0.0014	2.077E-10	0.0001	0.000E+00	0.0000	1.609E-07	0.0507	5.024E-08	0.0158	1.280E-07	0.0404	1.463E-07	0.0461
U-235	5.820E-07	0.1835	1.197E-11	0.0000	0.000E+00	0.0000	9.794E-09	0.0031	3.071E-09	0.0010	7.784E-09	0.0025	8.900E-09	0.0028

U-238	1.655E-06	0.5219	1.563E-10	0.0000	0.000E+00	0.0000	1.372E-07	0.0433	4.287E-08	0.0135	1.092E-07	0.0344	1.248E-07	0.0394
Total	2.242E-06	0.7069	3.760E-10	0.0001	0.000E+00	0.0000	3.079E-07	0.0971	9.618E-08	0.0303	2.450E-07	0.0773	2.800E-07	0.0883

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.901E-07	0.1546
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.116E-07	0.1929
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.069E-06	0.6526
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.171E-06	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	4.374E-09	0.0014	1.990E-10	0.0001	0.000E+00	0.0000	1.541E-07	0.0503	4.813E-08	0.0157	1.226E-07	0.0401	1.401E-07	0.0458
U-235	5.642E-07	0.1843	1.148E-11	0.0000	0.000E+00	0.0000	9.397E-09	0.0031	2.963E-09	0.0010	7.456E-09	0.0024	8.528E-09	0.0028
U-238	1.602E-06	0.5234	1.497E-10	0.0000	0.000E+00	0.0000	1.314E-07	0.0429	4.106E-08	0.0134	1.046E-07	0.0342	1.196E-07	0.0391
Total	2.171E-06	0.7091	3.601E-10	0.0001	0.000E+00	0.0000	2.949E-07	0.0963	9.215E-08	0.0301	2.347E-07	0.0767	2.682E-07	0.0876

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0

0

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.695E-07	0.1534
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.925E-07	0.1936
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.999E-06	0.6530
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.061E-06	1.0000

0*Sum of all water independent and dependent pathways.

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U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.579E-07	0.1372
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.829E-07	0.2037
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.239E-06	0.6592
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.880E-06	1.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

0*Sum of all water independent and dependent pathways.
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File : C:\RESRAD FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM OFFSITE RESF.RAD

U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0

0

	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.801E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	5.991E-11	0.0712	3.315E-13	0.0004	7.291E-13	0.0009	8.410E-10	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.801E-10	0.9275	0.000E+00	0.0000	0.000E+00	0.0000	5.991E-11	0.0712	3.315E-13	0.0004	7.291E-13	0.0009	8.410E-10	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	U-234	U-234	1.000E+00	2.003E-02	1.960E-02	1.878E-02	1.613E-02	1.030E-02	1.535E-03	0.000E+00	0.000E+00
	U-234	Th-230	1.000E+00	1.949E-07	5.628E-07	1.265E-06	3.422E-06	7.405E-06	6.640E-06	0.000E+00	0.000E+00
	U-234	Ra-226+D	1.000E+00	3.491E-09	2.442E-08	1.268E-07	1.049E-06	6.980E-06	2.691E-05	0.000E+00	0.000E+00
	U-234	Pb-210+D	1.000E+00	1.045E-11	1.377E-10	1.432E-09	3.099E-08	4.708E-07	2.654E-06	0.000E+00	0.000E+00
	U-234	ΣDSR(j)		2.003E-02	1.960E-02	1.878E-02	1.614E-02	1.032E-02	1.572E-03	0.000E+00	0.000E+00
0U	U-235+D	U-235+D	1.000E+00	3.883E-01	3.822E-01	3.703E-01	3.311E-01	2.390E-01	6.127E-02	0.000E+00	0.000E+00
	U-235+D	Pa-231	1.000E+00	7.167E-06	2.208E-05	5.023E-05	1.310E-04	2.468E-04	1.302E-04	0.000E+00	0.000E+00
	U-235+D	Ac-227+D	1.000E+00	1.306E-07	8.636E-07	4.215E-06	2.964E-05	1.315E-04	1.665E-04	0.000E+00	5.257E-04
	U-235+D	ΣDSR(j)		3.883E-01	3.822E-01	3.703E-01	3.313E-01	2.393E-01	6.157E-02	0.000E+00	5.257E-04
0U	U-238	U-238	5.450E-07	9.792E-09	9.585E-09	9.181E-09	7.886E-09	5.031E-09	7.455E-10	0.000E+00	0.000E+00
0U	U-238+D	U-238+D	1.000E+00	9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00
	U-238+D	U-234	1.000E+00	2.817E-08	8.293E-08	1.855E-07	4.782E-07	8.870E-07	4.357E-07	0.000E+00	0.000E+00
	U-238+D	Th-230	1.000E+00	1.878E-13	1.248E-12	6.281E-12	4.956E-11	2.952E-10	7.175E-10	0.000E+00	0.000E+00
	U-238+D	Ra-226+D	1.000E+00	2.448E-15	3.670E-14	4.201E-13	1.021E-11	1.909E-10	2.154E-09	0.000E+00	0.000E+00
	U-238+D	Pb-210+D	1.000E+00	6.116E-18	1.657E-16	3.684E-15	2.325E-13	1.019E-11	1.826E-10	0.000E+00	0.000E+00
	U-238+D	ΣDSR(j)		9.570E-02	9.406E-02	9.086E-02	8.043E-02	5.633E-02	1.327E-02	0.000E+00	0.000E+00

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 2.500E+01 mrem/yr

0Nuclide (i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	1.248E+03	1.275E+03	1.331E+03	1.549E+03	2.424E+03	1.591E+04	*6.222E+09	*6.222E+09	
U-235	6.438E+01	6.541E+01	6.751E+01	7.546E+01	1.045E+02	4.061E+02	*2.160E+06	4.756E+04	
U-238	2.612E+02	2.658E+02	2.751E+02	3.108E+02	4.438E+02	1.884E+03	*3.361E+05	*3.361E+05	

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g) and Single Radionuclide Soil Guidelines G(i,t) in pCi/g at tmin = time of minimum single radionuclide soil guideline and at tmax = time of maximum total dose = 0.000E+00 years						
0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
U-234	2.500E-05	0.000E+00	2.003E-02	1.248E+03	2.003E-02	1.248E+03
U-235	1.600E-06	0.000E+00	3.883E-01	6.438E+01	3.883E-01	6.438E+01
U-238	2.200E-05	0.000E+00	9.570E-02	2.612E+02	9.570E-02	2.612E+02

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Individual Nuclide Dose Summed Over All Pathways											
Parent Nuclide and Branch Fraction Indicated											
ONuclide (j)	Parent (i)	THF(i)	t=	DOSE(j,t), mrem/yr							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00	5.007E-07	4.901E-07	4.695E-07	4.033E-07	2.575E-07	3.838E-08	0.000E+00	0.000E+00	
U-234	U-238	1.000E+00	6.198E-13	1.824E-12	4.081E-12	1.052E-11	1.951E-11	9.585E-12	0.000E+00	0.000E+00	
U-234	ΣDOSE(j)		5.007E-07	4.901E-07	4.695E-07	4.033E-07	2.575E-07	3.839E-08	0.000E+00	0.000E+00	
0Th-230	U-234	1.000E+00	4.872E-12	1.407E-11	3.163E-11	8.555E-11	1.851E-10	1.660E-10	0.000E+00	0.000E+00	
Th-230	U-238	1.000E+00	4.132E-18	2.747E-17	1.382E-16	1.090E-15	6.495E-15	1.579E-14	0.000E+00	0.000E+00	
Th-230	ΣDOSE(j)		4.872E-12	1.407E-11	3.163E-11	8.555E-11	1.851E-10	1.660E-10	0.000E+00	0.000E+00	
0Ra-226	U-234	1.000E+00	8.728E-14	6.104E-13	3.169E-12	2.622E-11	1.745E-10	6.729E-10	0.000E+00	0.000E+00	
Ra-226	U-238	1.000E+00	5.385E-20	8.075E-19	9.242E-18	2.245E-16	4.200E-15	4.738E-14	0.000E+00	0.000E+00	
Ra-226	ΣDOSE(j)		8.728E-14	6.104E-13	3.169E-12	2.622E-11	1.745E-10	6.729E-10	0.000E+00	0.000E+00	
0Pb-210	U-234	1.000E+00	2.612E-16	3.442E-15	3.581E-14	7.748E-13	1.177E-11	6.635E-11	0.000E+00	0.000E+00	
Pb-210	U-238	1.000E+00	1.346E-22	3.646E-21	8.104E-20	5.114E-18	2.242E-16	4.018E-15	0.000E+00	0.000E+00	
Pb-210	ΣDOSE(j)		2.612E-16	3.442E-15	3.581E-14	7.748E-13	1.177E-11	6.636E-11	0.000E+00	0.000E+00	
0U-235	U-235	1.000E+00	6.213E-07	6.115E-07	5.924E-07	5.298E-07	3.823E-07	9.803E-08	0.000E+00	0.000E+00	
0Pa-231	U-235	1.000E+00	1.147E-11	3.532E-11	8.036E-11	2.096E-10	3.948E-10	2.083E-10	0.000E+00	0.000E+00	
0Ac-227	U-235	1.000E+00	2.089E-13	1.382E-12	6.744E-12	4.742E-11	2.104E-10	2.664E-10	0.000E+00	8.410E-10	
0U-238	U-238	5.450E-07	2.154E-13	2.109E-13	2.020E-13	1.735E-13	1.107E-13	1.640E-14	0.000E+00	0.000E+00	
U-238	U-238	1.000E+00	2.105E-06	2.069E-06	1.999E-06	1.770E-06	1.239E-06	2.919E-07	0.000E+00	0.000E+00	
U-238	ΣDOSE(j)		2.105E-06	2.069E-06	1.999E-06	1.770E-06	1.239E-06	2.919E-07	0.000E+00	0.000E+00	

THF(i) is the thread fraction of the parent nuclide.

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Summary : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Individual Nuclide Soil Concentration											
Parent Nuclide and Branch Fraction Indicated											
ONuclide (j)	Parent (i)	THF(i)	t=	S(j,t), pCi/g							
				0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
U-234	U-234	1.000E+00		2.500E-05	2.463E-05	2.392E-05	2.157E-05	1.605E-05	5.707E-06	2.975E-07	9.614E-12
U-234	U-238	1.000E+00		0.000E+00	6.120E-11	1.783E-10	5.359E-10	1.196E-09	1.418E-09	2.218E-10	2.392E-14
U-234	ES(j):			2.500E-05	2.463E-05	2.392E-05	2.157E-05	1.605E-05	5.709E-06	2.977E-07	9.638E-12
0Th-230	U-234	1.000E+00		0.000E+00	2.282E-10	6.746E-10	2.137E-09	5.569E-09	1.199E-08	1.530E-08	1.525E-08
Th-230	U-238	1.000E+00		0.000E+00	2.828E-16	2.496E-15	2.589E-14	1.923E-13	1.136E-12	2.439E-12	2.570E-12
Th-230	ES(j):			0.000E+00	2.282E-10	6.746E-10	2.137E-09	5.570E-09	1.200E-08	1.530E-08	1.526E-08
0Ra-226	U-234	1.000E+00		0.000E+00	4.937E-14	4.368E-13	4.572E-12	3.478E-11	2.218E-10	5.439E-10	6.022E-10
Ra-226	U-238	1.000E+00		0.000E+00	4.082E-20	1.080E-18	3.728E-17	8.242E-16	1.555E-14	7.803E-14	1.014E-13
Ra-226	ES(j):			0.000E+00	4.937E-14	4.368E-13	4.572E-12	3.478E-11	2.218E-10	5.440E-10	6.023E-10
0Pb-210	U-234	1.000E+00		0.000E+00	5.100E-16	1.334E-14	4.420E-13	8.783E-12	1.239E-10	4.220E-10	4.871E-10
Pb-210	U-238	1.000E+00		0.000E+00	3.169E-22	2.487E-20	2.751E-18	1.640E-16	7.459E-15	5.817E-14	8.205E-14
Pb-210	ES(j):			0.000E+00	5.100E-16	1.334E-14	4.420E-13	8.783E-12	1.239E-10	4.221E-10	4.872E-10
0U-235	U-235	1.000E+00		1.600E-06	1.577E-06	1.531E-06	1.380E-06	1.027E-06	3.654E-07	1.905E-08	6.170E-13
0Pa-231	U-235	1.000E+00		0.000E+00	3.336E-11	9.716E-11	2.920E-10	6.519E-10	7.723E-10	1.206E-10	1.292E-14

0Ac-227	U-235	1.000E+00	0.000E+00	5.216E-13	4.400E-12	3.916E-11	1.944E-10	3.726E-10	6.697E-11	7.507E-15
0U-238	U-238	5.450E-07	1.199E-11	1.181E-11	1.147E-11	1.034E-11	7.698E-12	2.738E-12	1.428E-13	4.624E-18
U-238	U-238	1.000E+00	2.200E-05	2.168E-05	2.105E-05	1.898E-05	1.413E-05	5.024E-06	2.620E-07	8.484E-12
U-238	ΣS(j):		2.200E-05	2.168E-05	2.105E-05	1.898E-05	1.413E-05	5.024E-06	2.620E-07	8.484E-12

THF(i) is the thread fraction of the parent nuclide.
 0RESCALC.EXE execution time = 10.11 seconds

Table of Contents

Part III: Intake Quantities and Health Risk Factors

Cancer Risk Slope Factors	2
Risk Slope and ETFG for the Ground Pathway	4
Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	5
Time= 1.000E+00	8
Time= 3.000E+00	11
Time= 1.000E+01	14
Time= 3.000E+01	17
Time= 1.000E+02	20
Time= 3.000E+02	23
Time= 1.000E+03	26

Cancer Risk Slope Factors Summary Table
 Risk Library: DCFPAK3.02 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D	1.63E-06	1.98E-10	SLPF(1,1)
Sf-1	Pa-231	1.27E-07	1.27E-07	SLPF(2,1)
Sf-1	Pb-210+D	4.30E-09	1.48E-09	SLPF(3,1)
Sf-1	Ra-226+D	8.37E-06	2.50E-08	SLPF(4,1)
Sf-1	Th-230	8.45E-10	8.45E-10	SLPF(5,1)
Sf-1	U-234	2.53E-10	2.53E-10	SLPF(6,1)
Sf-1	U-235+D	5.76E-07	5.51E-07	SLPF(7,1)
Sf-1	U-238	1.24E-10	1.24E-10	SLPF(8,1)
Sf-1	U-238+D	1.19E-07	1.24E-10	SLPF(9,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D	2.13E-07	1.49E-07	SLPF(1,2)
Sf-2	Pa-231	7.62E-08	7.62E-08	SLPF(2,2)
Sf-2	Pb-210+D	3.08E-08	1.59E-08	SLPF(3,2)
Sf-2	Ra-226+D	2.82E-08	2.81E-08	SLPF(4,2)
Sf-2	Th-230	3.41E-08	3.41E-08	SLPF(5,2)
Sf-2	U-234	2.78E-08	2.78E-08	SLPF(6,2)
Sf-2	U-235+D	2.50E-08	2.50E-08	SLPF(7,2)
Sf-2	U-238	2.36E-08	2.36E-08	SLPF(8,2)
Sf-2	U-238+D	2.37E-08	2.36E-08	SLPF(9,2)

Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,3)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,3)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,3)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,3)
Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,3)
Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,3)
Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,3)
Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.87E-10	2.01E-10	SLPF(1,4)
Sf-3	Pa-231	1.72E-10	1.72E-10	SLPF(2,4)
Sf-3	Pb-210+D	2.67E-09	8.84E-10	SLPF(3,4)
Sf-3	Ra-226+D	3.85E-10	3.85E-10	SLPF(4,4)
Sf-3	Th-230	9.14E-11	9.14E-11	SLPF(5,4)
Sf-3	U-234	7.07E-11	7.07E-11	SLPF(6,4)
Sf-3	U-235+D	7.17E-11	6.95E-11	SLPF(7,4)
Sf-3	U-238	6.40E-11	6.40E-11	SLPF(8,4)
Sf-3	U-238+D	8.71E-11	6.40E-11	SLPF(9,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	6.54E-10	2.45E-10	SLPF(1,5)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(2,5)
Sf-3	Pb-210+D	3.44E-09	1.18E-09	SLPF(3,5)
Sf-3	Ra-226+D	5.15E-10	5.14E-10	SLPF(4,5)
Sf-3	Th-230	1.19E-10	1.19E-10	SLPF(5,5)

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 3

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport Post-Rem.

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Cancer Risk Slope Factors Summary Table (continued)

Risk Library: DCFPAK3.02 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	U-234	9.55E-11	9.55E-11	SLPF(6,5)
	Sf-3	U-235+D	9.76E-11	9.43E-11	SLPF(7,5)
	Sf-3	U-238	8.66E-11	8.66E-11	SLPF(8,5)
	Sf-3	U-238+D	1.21E-10	8.66E-11	SLPF(9,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-222	1.80E-12	1.80E-12	SLPFRN(1,1)
	Sf-Rn	Po-218	3.70E-12	3.70E-12	SLPFRN(1,2)
	Sf-Rn	Pb-214	6.20E-12	6.20E-12	SLPFRN(1,3)
	Sf-Rn	Bi-214	1.50E-11	1.50E-11	SLPFRN(1,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			

Sf-Rn	Rn-222 Indoor	3.88E+02	3.88E+02	KFACTR(1,1)
Sf-Rn	Rn-222 Outdoor	3.88E+02	3.88E+02	KFACTR(1,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.

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Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ac-227	1.990E-10	5.195E-01	5.192E-01	5.188E-01	5.169E-01	5.090E-01	4.061E-01	0.000E+00	0.000E+00
At-218	2.740E-11	5.070E-01	5.066E-01	5.059E-01	5.032E-01	4.932E-01	4.126E-01	0.000E+00	0.000E+00
At-219	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Bi-210	2.770E-09	5.169E-01	5.167E-01	5.163E-01	5.145E-01	5.075E-01	4.337E-01	0.000E+00	0.000E+00
Bi-211	1.900E-07	4.875E-01	4.869E-01	4.855E-01	4.805E-01	4.622E-01	3.177E-01	0.000E+00	0.000E+00
Bi-214	7.340E-06	4.352E-01	4.342E-01	4.322E-01	4.248E-01	4.003E-01	2.579E-01	0.000E+00	0.000E+00
Bi-215	1.080E-06	4.749E-01	4.741E-01	4.726E-01	4.667E-01	4.462E-01	2.988E-01	0.000E+00	0.000E+00
Fr-223	1.350E-07	5.060E-01	5.056E-01	5.047E-01	5.013E-01	4.882E-01	3.630E-01	0.000E+00	0.000E+00
Hg-206	4.830E-07	4.908E-01	4.902E-01	4.889E-01	4.842E-01	4.667E-01	3.231E-01	0.000E+00	0.000E+00
Pa-231	1.270E-07	4.940E-01	4.934E-01	4.923E-01	4.878E-01	4.712E-01	3.299E-01	0.000E+00	0.000E+00
Pa-234	6.620E-06	4.590E-01	4.581E-01	4.563E-01	4.498E-01	4.273E-01	2.821E-01	0.000E+00	0.000E+00
Pa-234m	9.060E-08	4.683E-01	4.675E-01	4.659E-01	4.600E-01	4.398E-01	3.064E-01	0.000E+00	0.000E+00
Pb-210	1.480E-09	5.384E-01	5.384E-01	5.384E-01	5.384E-01	5.383E-01	5.262E-01	0.000E+00	0.000E+00
Pb-211	2.910E-07	4.702E-01	4.694E-01	4.678E-01	4.616E-01	4.402E-01	2.916E-01	0.000E+00	0.000E+00
Pb-214	9.940E-07	4.897E-01	4.891E-01	4.878E-01	4.830E-01	4.654E-01	3.219E-01	0.000E+00	0.000E+00
Po-210	4.510E-11	4.576E-01	4.568E-01	4.550E-01	4.483E-01	4.256E-01	2.802E-01	0.000E+00	0.000E+00
Po-211	3.760E-08	4.588E-01	4.579E-01	4.562E-01	4.496E-01	4.272E-01	2.818E-01	0.000E+00	0.000E+00
Po-214	3.850E-10	4.594E-01	4.585E-01	4.568E-01	4.502E-01	4.277E-01	2.809E-01	0.000E+00	0.000E+00
Po-215	7.480E-10	4.807E-01	4.799E-01	4.785E-01	4.730E-01	4.533E-01	3.068E-01	0.000E+00	0.000E+00
Po-218	6.840E-15	5.225E-01	5.225E-01	5.225E-01	5.224E-01	5.208E-01	4.607E-01	0.000E+00	0.000E+00
Ra-223	4.550E-07	5.029E-01	5.024E-01	5.015E-01	4.979E-01	4.840E-01	3.519E-01	0.000E+00	0.000E+00
Ra-226	2.500E-08	5.061E-01	5.057E-01	5.049E-01	5.015E-01	4.886E-01	3.569E-01	0.000E+00	0.000E+00
Rn-218	3.390E-09	4.681E-01	4.673E-01	4.656E-01	4.594E-01	4.380E-01	2.907E-01	0.000E+00	0.000E+00
Rn-219	2.350E-07	4.899E-01	4.893E-01	4.880E-01	4.832E-01	4.656E-01	3.219E-01	0.000E+00	0.000E+00
Rn-222	1.690E-09	4.770E-01	4.762E-01	4.747E-01	4.689E-01	4.485E-01	3.005E-01	0.000E+00	0.000E+00
Th-227	4.450E-07	4.983E-01	4.978E-01	4.967E-01	4.926E-01	4.773E-01	3.392E-01	0.000E+00	0.000E+00
Th-230	8.450E-10	5.202E-01	5.200E-01	5.197E-01	5.185E-01	5.126E-01	4.175E-01	0.000E+00	0.000E+00
Th-231	2.490E-08	5.332E-01	5.330E-01	5.327E-01	5.314E-01	5.256E-01	4.330E-01	0.000E+00	0.000E+00
Th-234	1.780E-08	5.204E-01	5.203E-01	5.202E-01	5.196E-01	5.160E-01	4.335E-01	0.000E+00	0.000E+00
Tl-206	6.110E-09	5.148E-01	5.145E-01	5.140E-01	5.120E-01	5.045E-01	4.319E-01	0.000E+00	0.000E+00
Tl-207	1.590E-08	4.838E-01	4.832E-01	4.819E-01	4.771E-01	4.602E-01	3.407E-01	0.000E+00	0.000E+00
Tl-210	1.340E-05	4.400E-01	4.391E-01	4.371E-01	4.299E-01	4.058E-01	2.634E-01	0.000E+00	0.000E+00
U-234	2.530E-10	5.332E-01	5.331E-01	5.328E-01	5.316E-01	5.263E-01	4.454E-01	0.000E+00	0.000E+00
U-235	5.510E-07	5.068E-01	5.064E-01	5.055E-01	5.023E-01	4.896E-01	3.587E-01	0.000E+00	0.000E+00
U-238	1.240E-10	5.147E-01	5.143E-01	5.136E-01	5.107E-01	5.001E-01	4.030E-01	0.000E+00	0.000E+00

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	6.164E-09	9.063E-04	2.829E-04	7.216E-04	8.249E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.736E-03
U-235	3.945E-10	5.800E-05	1.811E-05	4.618E-05	5.280E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.751E-04
U-238	5.424E-09	7.975E-04	2.490E-04	6.350E-04	7.259E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.407E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.358E-15	0.0000	8.017E-20	0.0000	3.683E-17	0.0000	2.393E-18	0.0000	9.618E-19	0.0000	3.290E-17	0.0000
Pa-231	5.450E-16	0.0000	1.484E-19	0.0000	2.582E-16	0.0000	3.432E-16	0.0000	4.962E-19	0.0000	5.883E-17	0.0000
Pb-210	9.559E-20	0.0000	2.809E-22	0.0000	1.881E-17	0.0000	4.021E-18	0.0000	2.104E-18	0.0000	4.198E-18	0.0000
Ra-226	8.722E-16	0.0000	1.500E-21	0.0000	6.417E-17	0.0000	6.594E-18	0.0000	8.805E-18	0.0000	3.664E-18	0.0000
Th-230	2.996E-17	0.0000	5.109E-19	0.0000	1.055E-16	0.0000	2.358E-17	0.0000	1.737E-18	0.0000	2.390E-16	0.0000
U-234	7.251E-14	0.0015	3.402E-15	0.0001	1.717E-12	0.0360	5.364E-13	0.0112	1.367E-12	0.0286	1.562E-12	0.0327
U-235	9.989E-12	0.2093	1.957E-16	0.0000	1.123E-13	0.0024	3.509E-14	0.0007	8.940E-14	0.0019	1.022E-13	0.0021
U-238	2.637E-11	0.5526	2.547E-15	0.0001	1.908E-12	0.0400	5.960E-13	0.0125	1.518E-12	0.0318	1.735E-12	0.0364

Total 3.643E-11 0.7635 6.145E-15 0.0001 3.738E-12 0.0783 1.168E-12 0.0245 2.974E-12 0.0623 3.400E-12 0.0713
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 6
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.432E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.206E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.923E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.555E-16	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.003E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.258E-12	0.1102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-11	0.2164
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.213E-11	0.6733
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.772E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 0.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	7.341E-14	0.0015	3.402E-15	0.0001	0.000E+00	0.0000	1.717E-12	0.0360	5.364E-13	0.0112	1.367E-12	0.0286	1.562E-12	0.0327

U-235	9.991E-12	0.2094	1.960E-16	0.0000	0.000E+00	0.0000	1.126E-13	0.0024	3.543E-14	0.0007	8.940E-14	0.0019	1.023E-13	0.0021
U-238	2.637E-11	0.5526	2.547E-15	0.0001	0.000E+00	0.0000	1.908E-12	0.0400	5.960E-13	0.0125	1.518E-12	0.0318	1.735E-12	0.0364
Total	3.643E-11	0.7635	6.145E-15	0.0001	0.000E+00	0.0000	3.738E-12	0.0783	1.168E-12	0.0245	2.975E-12	0.0623	3.400E-12	0.0713

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.260E-12	0.1102
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.033E-11	0.2165
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.213E-11	0.6733
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.772E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 8
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.277E-16	2.273E-11	1.070E-11	5.112E-13	1.710E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.104E-11
Pa-231	8.169E-15	4.680E-09	5.972E-09	1.149E-11	1.093E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.176E-08
Pb-210	1.249E-19	9.514E-14	1.932E-14	9.555E-15	1.672E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.407E-13
Ra-226	1.209E-17	2.654E-11	2.357E-12	3.521E-12	1.618E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.403E-11
Th-230	5.589E-14	3.461E-09	8.334E-10	7.091E-11	7.479E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.185E-08
U-234	6.033E-09	8.877E-04	2.773E-04	7.064E-04	8.074E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.679E-03
U-235	3.861E-10	5.681E-05	1.775E-05	4.521E-05	5.167E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.714E-04
U-238	5.309E-09	7.812E-04	2.440E-04	6.217E-04	7.105E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.357E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+00 years
 Radionuclides

0

Water-ind. == Water-independent Water-dep. == Water-dependent

0 Water Independent Pathways (Inhalation excludes radon)

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	7.241E-14	0.0015	3.328E-15	0.0001	0.000E+00	0.0000	1.680E-12	0.0358	5.248E-13	0.0112	1.337E-12	0.0285	1.528E-12	0.0326
U-235	9.835E-12	0.2098	1.917E-16	0.0000	0.000E+00	0.0000	1.102E-13	0.0024	3.469E-14	0.0007	8.745E-14	0.0019	1.000E-13	0.0021
U-238	2.594E-11	0.5532	2.492E-15	0.0001	0.000E+00	0.0000	1.867E-12	0.0398	5.830E-13	0.0124	1.485E-12	0.0317	1.698E-12	0.0362
Total	3.584E-11	0.7645	6.011E-15	0.0001	0.000E+00	0.0000	3.657E-12	0.0780	1.143E-12	0.0244	2.910E-12	0.0621	3.326E-12	0.0709

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 10

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.146E-12	0.1098
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.017E-11	0.2169
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.157E-11	0.6734
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.688E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 11

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.063E-15	1.681E-10	3.415E-11	4.190E-12	1.423E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.487E-10
Pa-231	2.347E-14	1.369E-08	1.800E-08	2.829E-11	3.142E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.487E-08
Pb-210	3.222E-18	2.096E-12	4.477E-13	2.270E-13	4.312E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.202E-12
Ra-226	1.055E-16	2.427E-10	2.393E-11	3.296E-11	1.412E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.137E-10
Th-230	1.630E-13	9.755E-09	2.229E-09	1.719E-10	2.181E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.397E-08
U-234	5.779E-09	8.503E-04	2.656E-04	6.767E-04	7.734E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.566E-03
U-235	3.698E-10	5.442E-05	1.700E-05	4.331E-05	4.950E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.642E-04
U-238	5.085E-09	7.483E-04	2.337E-04	5.955E-04	6.806E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.258E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	1.759E-15	0.0000	1.026E-19	0.0000	4.705E-17	0.0000	2.881E-18	0.0000	1.230E-18	0.0000	4.209E-17	0.0000
Pa-231	6.476E-16	0.0000	1.742E-19	0.0000	3.031E-16	0.0000	4.031E-16	0.0000	5.804E-19	0.0000	6.905E-17	0.0000
Pb-210	1.425E-19	0.0000	4.116E-22	0.0000	2.752E-17	0.0000	5.882E-18	0.0000	3.079E-18	0.0000	6.151E-18	0.0000
Ra-226	1.179E-15	0.0000	2.006E-21	0.0000	8.585E-17	0.0000	8.831E-18	0.0000	1.178E-17	0.0000	4.899E-18	0.0000
Th-230	3.627E-17	0.0000	6.093E-19	0.0000	1.257E-16	0.0000	2.807E-17	0.0000	2.064E-18	0.0000	2.851E-16	0.0000
U-234	6.928E-14	0.0015	3.184E-15	0.0001	1.607E-12	0.0355	5.020E-13	0.0111	1.279E-12	0.0283	1.462E-12	0.0323
U-235	9.526E-12	0.2105	1.832E-16	0.0000	1.051E-13	0.0023	3.284E-14	0.0007	8.366E-14	0.0018	9.562E-14	0.0021
U-238	2.509E-11	0.5545	2.384E-15	0.0001	1.786E-12	0.0395	5.578E-13	0.0123	1.421E-12	0.0314	1.624E-12	0.0359

Total 3.469E-11 0.7666 5.751E-15 0.0001 3.499E-12 0.0773 1.093E-12 0.0242 2.784E-12 0.0615 3.182E-12 0.0703
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 12
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.853E-15	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.424E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.277E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.290E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.778E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.923E-12	0.1088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.843E-12	0.2175
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.048E-11	0.6736
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.525E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+00 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	7.049E-14	0.0016	3.184E-15	0.0001	0.000E+00	0.0000	1.607E-12	0.0355	5.021E-13	0.0111	1.279E-12	0.0283	1.462E-12	0.0323

U-235	9.528E-12	0.2105	1.835E-16	0.0000	0.000E+00	0.0000	1.055E-13	0.0023	3.325E-14	0.0007	8.366E-14	0.0018	9.573E-14	0.0021
U-238	2.509E-11	0.5545	2.384E-15	0.0001	0.000E+00	0.0000	1.786E-12	0.0395	5.578E-13	0.0123	1.421E-12	0.0314	1.624E-12	0.0359
Total	3.469E-11	0.7666	5.751E-15	0.0001	0.000E+00	0.0000	3.499E-12	0.0773	1.093E-12	0.0242	2.784E-12	0.0615	3.182E-12	0.0703

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 13
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.924E-12	0.1088
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.846E-12	0.2176
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.048E-11	0.6736
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.525E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 14
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	9.012E-15	1.360E-09	1.154E-10	3.530E-11	1.206E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.717E-09
Pa-231	6.720E-14	3.945E-08	5.239E-08	7.624E-11	8.994E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.009E-07
Pb-210	1.017E-16	6.189E-11	1.324E-11	6.883E-12	1.361E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.563E-11
Ra-226	1.052E-15	2.459E-09	2.512E-10	3.369E-10	1.408E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.188E-09
Th-230	4.917E-13	2.907E-08	6.512E-09	4.818E-10	6.581E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.019E-07
U-234	4.963E-09	7.303E-04	2.281E-04	5.811E-04	6.642E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.204E-03
U-235	3.176E-10	4.674E-05	1.460E-05	3.719E-05	4.251E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.410E-04
U-238	4.367E-09	6.426E-04	2.007E-04	5.114E-04	5.845E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.939E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+01 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	2.779E-15	0.0001	1.568E-19	0.0000	7.175E-17	0.0000	3.861E-18	0.0000	1.881E-18	0.0000	6.436E-17	0.0000				
Pa-231	8.444E-16	0.0000	2.194E-19	0.0000	3.819E-16	0.0000	5.084E-16	0.0000	7.266E-19	0.0000	8.695E-17	0.0000				
Pb-210	3.081E-19	0.0000	8.536E-22	0.0000	5.690E-17	0.0000	1.216E-17	0.0000	6.373E-18	0.0000	1.276E-17	0.0000				
Ra-226	2.073E-15	0.0001	3.432E-21	0.0000	1.470E-16	0.0000	1.515E-17	0.0000	2.018E-17	0.0000	8.381E-18	0.0000				
Th-230	4.985E-17	0.0000	8.026E-19	0.0000	1.654E-16	0.0000	3.688E-17	0.0000	2.700E-18	0.0000	3.755E-16	0.0000				
U-234	6.226E-14	0.0016	2.722E-15	0.0001	1.374E-12	0.0344	4.292E-13	0.0107	1.094E-12	0.0274	1.250E-12	0.0313				
U-235	8.517E-12	0.2132	1.566E-16	0.0000	8.989E-14	0.0023	2.808E-14	0.0007	7.153E-14	0.0018	8.175E-14	0.0020				
U-238	2.233E-11	0.5589	2.038E-15	0.0001	1.527E-12	0.0382	4.769E-13	0.0119	1.215E-12	0.0304	1.389E-12	0.0348				
Total	3.091E-11	0.7739	4.918E-15	0.0001	2.992E-12	0.0749	9.348E-13	0.0234	2.380E-12	0.0596	2.721E-12	0.0681				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.921E-15	0.0001
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.823E-15	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.850E-17	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.264E-15	0.0001
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.311E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.212E-12	0.1054
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.789E-12	0.2200
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.693E-11	0.6743
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.994E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	6.438E-14	0.0016	2.722E-15	0.0001	0.000E+00	0.0000	1.374E-12	0.0344	4.293E-13	0.0107	1.093E-12	0.0274	1.250E-12	0.0313
U-235	8.521E-12	0.2133	1.570E-16	0.0000	0.000E+00	0.0000	9.034E-14	0.0023	2.859E-14	0.0007	7.153E-14	0.0018	8.190E-14	0.0021
U-238	2.233E-11	0.5589	2.038E-15	0.0001	0.000E+00	0.0000	1.527E-12	0.0382	4.769E-13	0.0119	1.215E-12	0.0304	1.389E-12	0.0348
Total	3.091E-11	0.7739	4.918E-15	0.0001	0.000E+00	0.0000	2.992E-12	0.0749	9.348E-13	0.0234	2.380E-12	0.0596	2.721E-12	0.0681

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 16

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.214E-12	0.1055
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.793E-12	0.2201
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.693E-11	0.6743
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.994E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 17

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.834E-14	5.710E-09	2.788E-10	1.499E-10	5.131E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.127E-08
Pa-231	1.286E-13	7.561E-08	1.007E-07	1.433E-10	1.721E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.937E-07
Pb-210	1.732E-15	1.033E-09	2.206E-10	1.157E-10	2.318E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.601E-09
Ra-226	6.861E-15	1.611E-08	1.662E-09	2.213E-09	9.182E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.091E-08
Th-230	1.099E-12	6.472E-08	1.441E-08	1.053E-09	1.470E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.272E-07
U-234	3.166E-09	4.659E-04	1.455E-04	3.707E-04	4.237E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.406E-03
U-235	2.026E-10	2.982E-05	9.314E-06	2.373E-05	2.712E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.998E-05
U-238	2.786E-09	4.100E-04	1.281E-04	3.263E-04	3.729E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.237E-03

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	5.249E-15	0.0002	2.645E-19	0.0000	1.205E-16	0.0000	5.280E-18	0.0000	3.170E-18	0.0000	1.085E-16	0.0000
Pa-231	1.144E-15	0.0000	2.639E-19	0.0000	4.597E-16	0.0000	6.126E-16	0.0000	8.689E-19	0.0000	1.046E-16	0.0000
Pb-210	1.269E-18	0.0000	3.047E-21	0.0000	2.022E-16	0.0000	4.318E-17	0.0000	2.268E-17	0.0000	4.553E-17	0.0000
Ra-226	5.451E-15	0.0002	8.214E-21	0.0000	3.523E-16	0.0000	3.640E-17	0.0000	4.840E-17	0.0000	2.006E-17	0.0000
Th-230	8.058E-17	0.0000	1.121E-18	0.0000	2.309E-16	0.0000	5.138E-17	0.0000	3.746E-18	0.0000	5.247E-16	0.0000
U-234	4.566E-14	0.0016	1.709E-15	0.0001	8.628E-13	0.0312	2.695E-13	0.0097	6.865E-13	0.0248	7.847E-13	0.0283
U-235	6.127E-12	0.2213	9.832E-17	0.0000	5.643E-14	0.0020	1.763E-14	0.0006	4.491E-14	0.0016	5.133E-14	0.0019
U-238	1.583E-11	0.5718	1.279E-15	0.0000	9.585E-13	0.0346	2.994E-13	0.0108	7.627E-13	0.0275	8.718E-13	0.0315

Total 2.202E-11 0.7952 3.088E-15 0.0001 1.879E-12 0.0679 5.873E-13 0.0212 1.494E-12 0.0540 1.709E-12 0.0617
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 18
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.487E-15	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.322E-15	0.0001
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.148E-16	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.908E-15	0.0002
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.924E-16	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.651E-12	0.0957
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.297E-12	0.2274
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.873E-11	0.6763
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.769E-11	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
 and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
 Radon and its Decay Products at t= 3.000E+01 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

0

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	5.119E-14	0.0018	1.710E-15	0.0001	0.000E+00	0.0000	8.635E-13	0.0312	2.696E-13	0.0097	6.865E-13	0.0248	7.852E-13	0.0284

U-235	6.133E-12	0.2215	9.885E-17	0.0000	0.000E+00	0.0000	5.702E-14	0.0021	1.825E-14	0.0007	4.491E-14	0.0016	5.154E-14	0.0019
U-238	1.583E-11	0.5718	1.280E-15	0.0000	0.000E+00	0.0000	9.586E-13	0.0346	2.995E-13	0.0108	7.628E-13	0.0275	8.718E-13	0.0315
Total	2.202E-11	0.7952	3.088E-15	0.0001	0.000E+00	0.0000	1.879E-12	0.0679	5.873E-13	0.0212	1.494E-12	0.0540	1.709E-12	0.0617

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 19
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.658E-12	0.0960
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.305E-12	0.2277
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.873E-11	0.6763
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.769E-11	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 20
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
 File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	3.062E-14	4.544E-09	1.696E-10	1.197E-10	4.099E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.931E-09
Pa-231	6.347E-14	3.736E-08	4.983E-08	7.031E-11	8.494E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.576E-08
Pb-210	1.018E-14	6.028E-09	1.288E-09	6.772E-10	1.362E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.355E-09
Ra-226	1.823E-14	4.289E-08	4.444E-09	5.897E-09	2.440E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.567E-08
Th-230	9.858E-13	5.803E-08	1.290E-08	9.380E-10	1.319E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.038E-07
U-234	4.692E-10	6.907E-05	2.158E-05	5.494E-05	6.279E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.084E-04
U-235	3.003E-11	4.420E-06	1.381E-06	3.517E-06	4.019E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.334E-05
U-238	4.129E-10	6.078E-05	1.899E-05	4.835E-05	5.526E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.834E-04

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+02 years
 Radionuclides

0

[illegible]

0

0

0

Radio-Nuclide	risk		fract.		risk		fract.		risk		fract.		risk		fract.	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	4.146E-15	0.0007	1.206E-19	0.0000	5.487E-17	0.0000	2.027E-18	0.0000	1.445E-18	0.0000	4.950E-17	0.0000				
Pa-231	6.546E-16	0.0001	8.745E-20	0.0000	1.525E-16	0.0000	2.035E-16	0.0000	2.869E-19	0.0000	3.466E-17	0.0000				
Pb-210	7.309E-18	0.0000	7.241E-21	0.0000	4.788E-16	0.0001	1.023E-16	0.0000	5.379E-17	0.0000	1.082E-16	0.0000				
Ra-226	1.222E-14	0.0021	1.127E-20	0.0000	4.842E-16	0.0001	5.020E-17	0.0000	6.658E-17	0.0000	2.753E-17	0.0000				
Th-230	1.004E-16	0.0000	6.749E-19	0.0000	1.389E-16	0.0000	3.089E-17	0.0000	2.244E-18	0.0000	3.158E-16	0.0001				
U-234	1.255E-14	0.0022	2.132E-16	0.0000	1.077E-13	0.0187	3.366E-14	0.0058	8.567E-14	0.0149	9.790E-14	0.0170				
U-235	1.398E-12	0.2426	1.227E-17	0.0000	7.046E-15	0.0012	2.202E-15	0.0004	5.604E-15	0.0010	6.404E-15	0.0011				
U-238	3.625E-12	0.6290	1.596E-16	0.0000	1.197E-13	0.0208	3.740E-14	0.0065	9.518E-14	0.0165	1.088E-13	0.0189				
Total	5.052E-12	0.8768	3.860E-16	0.0001	2.357E-13	0.0409	7.365E-14	0.0128	1.866E-13	0.0324	2.136E-13	0.0371				

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.254E-15	0.0007
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.046E-15	0.0002
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.504E-16	0.0001
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.285E-14	0.0022
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.889E-16	0.0001
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.377E-13	0.0586
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.419E-12	0.2463
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.986E-12	0.6917
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.762E-12	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	2.487E-14	0.0043	2.138E-16	0.0000	0.000E+00	0.0000	1.088E-13	0.0189	3.384E-14	0.0059	8.577E-14	0.0149	9.833E-14	0.0171
U-235	1.403E-12	0.2434	1.248E-17	0.0000	0.000E+00	0.0000	7.253E-15	0.0013	2.407E-15	0.0004	5.606E-15	0.0010	6.488E-15	0.0011
U-238	3.625E-12	0.6290	1.597E-16	0.0000	0.000E+00	0.0000	1.197E-13	0.0208	3.741E-14	0.0065	9.521E-14	0.0165	1.088E-13	0.0189
Total	5.052E-12	0.8768	3.860E-16	0.0001	0.000E+00	0.0000	2.357E-13	0.0409	7.365E-14	0.0128	1.866E-13	0.0324	2.136E-13	0.0371

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 22

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.518E-13	0.0611
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.424E-12	0.2472
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.986E-12	0.6917
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.762E-12	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

[illegible]

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+02 years
Radionuclides

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.00E+02 years

Radio-Nuclide		Water Independent Pathways (Inhalation excludes radon)											
		Ground		Inhalation		Plant		Meat		Milk		Soil	
		risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.0000	0.000E+00	0.0000

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.00E+02 years

Water Dependent Pathways

[illegible]

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of Radon and its Decay Products at t= 3.000E+02 years

0

[illegible]

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

[illegible]

U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 25
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
 and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides
 1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 26
 Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport_Post-Rem.
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Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.811E-07	0.000E+00	3.695E-08	2.044E-10	4.497E-10	5.187E-07
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pb-210	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ra-226	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-230	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-234	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-238	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
 and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
 Radon and its Decay Products as pCi/yr at t= 1.000E+03 years
 Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

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Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F Atm Transport Post-Rem.

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Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	7.809E-15	0.9050	0.000E+00	0.0000	8.051E-16	0.0933	4.454E-18	0.0005	9.796E-18	0.0011	8.629E-15	1.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.809E-15	0.9050	0.000E+00	0.0000	8.051E-16	0.0933	4.454E-18	0.0005	9.796E-18	0.0011	8.629E-15	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years
Radionuclides

0

Radon Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

0

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

0

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

1RESRAD-ONSITE, Version 7.2 T½ Limit = 180 days 03/25/2023 14:41 Page 28

Intrisk : Shiprock GW Evap. Pond Offsite Res. Location F_Atm Transport Post-Rem.

File : C:\RESRAD_FAMILY\ONSITE\7.2\USERFILES\SHIPROCK_POST REM_OFFSITE RESF.RAD

Total Excess Cancer Risk CNRS(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
U-235	7.809E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	8.051E-16	0.0933	4.454E-18	0.0005	9.796E-18	0.0011	8.629E-15	1.0000
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	7.809E-15	0.9050	0.000E+00	0.0000	0.000E+00	0.0000	8.051E-16	0.0933	4.454E-18	0.0005	9.796E-18	0.0011	8.629E-15	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

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ATTACHMENT D-16

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Table D-16-1																	
Radiological Cancer Risks and Doses, Chemical Cancer Risks and Chemical Noncancer Hazards																	
Site Worker Exposures to Dry Sediment at the Groundwater Evaporation Pond, Remedial Alternative 1																	
Shiprock, New Mexico, Disposal Site																	
Medium	Exposure Medium	COPC	Excess Lifetime Cancer Risks (Unitless)					Radiological Doses (mrem/year)				Noncancer Hazards for Chronic Exposures (Unitless)					
			External Radiation	Dust Inhalation	Ingestion	Dermal Contact	Total	External Radiation	Dust Inhalation	Soil Ingestion	Total	Primary Target Organ(s) / Critical Effects from Chronic Exposures	Target Organ/ Critical Effects Reference	Hazard Quotients			Total Hazard Index
														Dust Inhalation	Ingestion	Dermal Contact	
Sediment	Sediment ^a	Radionuclides ^b															
		Uranium-234	8.6E-10	---	1.2E-08	---	1.3E-08	1.2E-03	---	2.3E-02	2.4E-02	---	---	---	---	---	---
		Uranium-235	1.2E-07	---	7.7E-10	---	1.2E-07	1.6E-01	---	1.4E-03	1.6E-01	---	---	---	---	---	---
		Uranium-238	3.4E-07	---	7.7E-10	---	3.4E-07	4.7E-01	---	1.9E-02	4.9E-01	---	---	---	---	---	---
		Radionuclide Total:	4.6E-07	---	1.3E-08	---	4.8E-07	6.2E-01	---	4.3E-02	6.7E-01	---	---	---	---	---	---
		Chemicals ^c															
		Manganese	---	---	---	---	---	---	---	---	---	Neurological	IRIS	---	5.8E-03	---	5.8E-03
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	---	1.7E-01	---	1.7E-01
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	---	1.7E-01	---	1.7E-01
		Exposure Medium Total:	4.6E-07	---	1.3E-08	---	4.8E-07	6.2E-01	---	4.3E-02	6.7E-01	---		---	1.7E-01	---	1.7E-01
	Air (Pond Sediment Dust Emissions from Wind Erosion)	Radionuclides ^b															
		Uranium-234	---	2.5E-12	---	---	2.5E-12	---	3.1E-06	---	3.1E-06	---	---	---	---	---	---
		Uranium-235	---	1.4E-13	---	---	1.4E-13	---	1.8E-07	---	1.8E-07	---	---	---	---	---	---
		Uranium-238	---	1.9E-12	---	---	1.9E-12	---	2.3E-06	---	2.3E-06	---	---	---	---	---	---
		Radionuclide Total:	---	4.5E-12	---	---	4.5E-12	---	5.6E-06	---	5.6E-06	---	---	---	---	---	---
		Chemicals ^c															
		Manganese	---	---	---	---	---	---	---	---	---	Neurological	IRIS	1.2E-05	---	---	1.2E-05
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	3.6E-06	---	---	3.6E-06
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	1.5E-05	---	---	1.5E-05
		Exposure Medium Total:	---	4.5E-12	---	---	4.5E-12	---	5.6E-06	---	5.6E-06	---	---	1.5E-05	---	---	1.5E-05
	Medium Total:		4.6E-07	4.5E-12	1.3E-08	---	4.8E-07	6.2E-01	5.6E-06	4.3E-02	6.7E-01	---	---	1.5E-05	1.7E-01	---	1.7E-01
Site Worker Total :		4.6E-07	4.5E-12	1.3E-08	---	4.8E-07	6.2E-01	5.6E-06	4.3E-02	6.7E-01	---	---	1.5E-05	1.7E-01	---	1.7E-01	

Notes:

^a Dry sediment, rather than wet sediment under water is evaluated as a more health-conservative assessment due to greater availability for exposure. The site worker is assumed to be more protected from surface water and wet sediment exposures due to PPR and best management practices per health & safety protocol. Therefore, surface water exposures are also not evaluated.

^b Radiological risks and doses were calculated using DOE's RESRAD-ONSITE model (version 7.2) and include contributions from respective decay chain progenies. Risks and doses were evaluated over a 1,000-year period, with the results representing the time of maximum total risk and dose.

^c Chemical cancer risks and noncancer hazards were calculated using EPA's online Regional Screening Levels calculator available at: https://epa-prgs.oml.gov/cgi-bin/chemicals/csl_search (EPA, 2022b).

Table D-16-2 Radiological Cancer Risks and Doses, Chemical Cancer Risks and Chemical Noncancer Hazards Trespasser Exposures to Surface Water and Sediment at the Groundwater Evaporation Pond, Remedial Alternative 1 Shiprock, New Mexico, Disposal Site																	
Medium	Exposure Medium	COPC	Excess Lifetime Cancer Risks (Unitless) ^a					Radiological Doses (mrem/year) ^a				Noncancer Hazards for Chronic Exposures (Unitless) ^a					
			External Radiation	Dust Inhalation	Ingestion	Dermal Contact	Total	External Radiation	Dust Inhalation	Ingestion	Total	Primary Target Organ(s) / Critical Effects from Chronic Exposures	Target Organ / Critical Effects Reference	Hazard Quotients			Total Hazard Index
Surface Water	Surface Water	Radionuclides ^b															
		Uranium-234	2.5E-13	---	1.4E-05	---	1.4E-05	3.4E-05	---	4.4E+00	4.4E+00	---	---	---	---	---	---
		Uranium-235	2.1E-11	---	9.7E-07	---	9.7E-07	2.5E-03	---	2.7E-01	2.8E-01	---	---	---	---	---	---
		Uranium-238	5.1E-11	---	1.6E-05	---	1.6E-05	1.6E-05	---	3.5E+00	3.5E+00	---	---	---	---	---	---
		Radionuclide Total:	7.2E-11	---	3.1E-05	---	3.1E-05	2.5E-03	---	8.2E+00	8.2E+00	---	---	---	---	---	---
		Chemicals ^c															
		Arsenic	---	---	1.5E-05	2.7E-06	1.8E-05	---	---	---	---	Cardiovascular; Dermal	IRIS	---	2.4E-01	4.2E-02	2.8E-01
		Fluoride	---	---	---	---	---	---	---	---	---	Bones, Teeth / Skeletal Fluorosis	CalEPA	---	1.7E-01	3.1E-02	2.0E-01
		Manganese	---	---	---	---	---	---	---	---	---	Neurological	IRIS	---	4.1E-02	1.8E-01	2.2E-01
		Selenium	---	---	---	---	---	---	---	---	---	Clinical Selenosis	IRIS	---	7.0E-01	1.2E-01	8.2E-01
		Thallium	---	---	---	---	---	---	---	---	---	Dermal	PPRTV	---	1.1E+00	1.9E-01	1.3E+00
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	---	2.3E+01	4.0E+00	2.7E+01
		Chemical Total:	---	---	1.5E-05	2.7E-06	1.8E-05	---	---	---	---	---	---	---	2.5E+01	4.6E+00	2.9E+01
		Exposure Medium Total:	7.2E-11	---	4.6E-05	2.7E-06	4.9E-05	2.5E-03	---	8.2E+00	8.2E+00	---	---	---	2.5E+01	4.6E+00	2.9E+01
	Medium Total:		7.2E-11	---	4.6E-05	2.7E-06	4.9E-05	2.5E-03	---	8.2E+00	8.2E+00	---	---	---	2.5E+01	4.6E+00	2.9E+01
Sediment	Sediment ^d	Chemicals ^c															
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	---	5.0E-02	---	5.0E-02
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	---	5.0E-02	---	5.0E-02
		Exposure Medium Total:	---	---	---	---	---	---	---	---	---	---	---	---	5.0E-02	---	5.0E-02
	Air (Pond Sediment Dust Emissions from Wind Erosion)	Chemicals ^c															
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	2.1E-07	---	---	2.1E-07
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	2.1E-07	---	---	2.1E-07
		Exposure Medium Total:	---	---	---	---	---	---	---	---	---	---	---	2.1E-07	---	---	2.1E-07
	Medium Total:		---	---	---	---	---	---	---	---	---	---	---	2.1E-07	5.0E-02	---	5.0E-02
	Trespasser Total :		7.2E-11	---	4.6E-05	2.7E-06	4.9E-05	2.5E-03	---	8.2E+00	8.2E+00	---	---	2.1E-07	2.5E+01	4.6E+00	2.9E+01
											Total Bones, Teeth / Skeletal Fluorosis HI Across All Media = 2.0E-01 Total Cardiovascular HI Across All Media = 2.8E-01 Total Dermal HI Across All Media = 1.6E+00 Total Neuological HI Across All Media = 2.2E-01 Total Renal HI Across All Media = 2.7E+01 Total Selenosis HI Across All Media = 8.2E-01						

Notes:

^a A trespasser is assumed to be an individual of ages 11 to 20 years old, exposed to pond media at a frequency of 1 hour per day, 75 days per year, over 10 years.

^b Radiological risks for surface water were calculated using ORNL's online calculator on the RAIS website: <https://rais.ornl.gov/>. Surface water doses were calculated using EPA's online Dose Compliance Concentrations (DCC) for Radionuclides calculator available at: <https://epa-dccs.ornl.gov/>. The surface water risks and doses presented include contributions from decay chain progenies.

^c Chemical cancer risks and noncancer hazards were calculated using ORNL's online calculator on the RAIS website: <https://rais.ornl.gov/>.

^d Dry sediment, rather than wet sediment under water is evaluated as a more health-conservative assessment due to greater availability for exposure.

Cancer risks presented in bold font exceed the lower limit of EPA's target risk range of 1E-06 to 1E-04 (i.e., 1E-06). Hazard quotients/indices presented in bold font exceed the EPA's target limit of 1.

Table D-16-3
Radiological Cancer Risks and Doses
Resident Farmer Exposures to Offsite Soil Impacted by Air Deposition of Dusts from Wind Erosion of Groundwater Evaporation Pond Sediment, Remedial Alternative 1
Shiprock, New Mexico, Disposal Site

COPC ^c	Pathway-Specific, Excess Lifetime Cancer Risk Risk ^{a,b}							Pathway-Specific Dose (mrem/year) ^{a,b}						
	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total
Offsite Location A														
Uranium-234	2.10E-16	4.94E-14	3.41E-16	5.19E-18	2.27E-17	1.01E-19	5.00E-14	2.86E-10	6.18E-08	6.55E-10	9.95E-12	4.35E-11	1.93E-13	6.28E-08
Uranium-235	6.91E-13	2.86E-15	2.24E-17	3.41E-19	1.49E-18	6.61E-21	6.94E-13	8.78E-07	3.58E-09	4.00E-11	6.09E-13	2.66E-12	1.18E-14	8.82E-07
Uranium-238	3.48E-12	3.70E-14	3.79E-16	5.77E-18	2.52E-17	1.12E-19	3.52E-12	4.78E-06	4.65E-08	5.59E-10	8.50E-12	3.71E-11	1.65E-13	4.83E-06
Total	4.17E-12	8.93E-14	7.42E-16	1.13E-17	4.94E-17	2.20E-19	4.26E-12	5.66E-06	1.12E-07	1.25E-09	1.91E-11	8.33E-11	3.70E-13	5.77E-06
Offsite Location B														
Uranium-234	5.09E-14	2.43E-13	1.50E-15	2.14E-17	1.10E-16	5.20E-19	2.96E-13	6.95E-08	3.04E-07	2.88E-09	4.10E-11	2.11E-10	9.99E-13	3.77E-07
Uranium-235	1.68E-10	1.41E-14	9.86E-17	1.40E-18	7.21E-18	3.42E-20	1.68E-10	2.13E-04	1.76E-08	1.76E-10	2.51E-12	1.29E-11	6.10E-14	2.13E-04
Uranium-238	8.46E-10	1.82E-13	1.67E-15	2.38E-17	1.22E-16	5.79E-19	8.46E-10	1.16E-03	2.29E-07	2.46E-09	3.50E-11	1.80E-10	8.52E-13	1.16E-03
Total	1.01E-09	4.39E-13	3.27E-15	4.66E-17	2.39E-16	1.13E-18	1.01E-09	1.37E-03	5.51E-07	5.52E-09	7.85E-11	4.04E-10	1.91E-12	1.37E-03
Offsite Location C														
Uranium-234	2.36E-15	6.06E-13	2.90E-15	7.98E-17	3.34E-16	1.26E-18	6.12E-13	3.22E-09	7.57E-07	5.57E-09	1.53E-10	6.41E-10	2.42E-12	7.67E-07
Uranium-235	7.78E-12	3.50E-14	1.91E-16	5.24E-18	2.19E-17	8.30E-20	7.82E-12	9.89E-06	4.39E-08	3.40E-10	9.37E-12	3.91E-11	1.48E-13	9.93E-06
Uranium-238	3.92E-11	4.54E-13	3.23E-15	8.87E-17	3.71E-16	1.40E-18	3.97E-11	5.38E-05	5.71E-07	4.75E-09	1.31E-10	5.47E-10	2.07E-12	5.44E-05
Total	4.70E-11	1.10E-12	6.32E-15	1.74E-16	7.27E-16	2.74E-18	4.81E-11	6.37E-05	1.37E-06	1.07E-08	2.93E-10	1.23E-09	4.64E-12	6.51E-05
Offsite Location D														
Uranium-234	1.01E-14	6.36E-13	2.96E-15	9.45E-17	4.80E-16	1.31E-18	6.50E-13	1.37E-08	7.96E-07	5.69E-09	1.81E-10	9.22E-10	2.52E-12	8.16E-07
Uranium-235	3.32E-11	3.68E-14	1.95E-16	6.21E-18	3.16E-17	8.63E-20	3.32E-11	4.22E-05	4.61E-08	3.48E-10	1.11E-11	5.63E-11	1.54E-13	4.22E-05
Uranium-238	1.67E-10	4.77E-13	3.30E-15	1.05E-16	5.34E-16	1.46E-18	1.67E-10	2.30E-04	5.99E-07	4.86E-09	1.55E-10	7.87E-10	2.15E-12	2.31E-04
Total	2.00E-10	1.15E-12	6.46E-15	2.06E-16	1.05E-15	2.86E-18	2.01E-10	2.72E-04	1.44E-06	1.09E-08	3.47E-10	1.77E-09	4.82E-12	2.74E-04
Offsite Location E														
Uranium-234	6.09E-14	1.76E-12	9.45E-15	1.05E-16	5.85E-16	3.92E-18	1.83E-12	8.31E-08	2.21E-06	1.81E-08	2.01E-10	1.12E-09	7.52E-12	2.31E-06
Uranium-235	2.01E-10	1.02E-13	6.21E-16	6.89E-18	3.85E-17	2.58E-19	2.01E-10	2.55E-04	1.28E-07	1.11E-09	1.23E-11	6.86E-11	4.60E-13	2.55E-04
Uranium-238	1.01E-09	1.32E-12	1.05E-14	1.17E-16	6.51E-16	4.36E-18	1.01E-09	1.39E-03	1.66E-06	1.55E-08	1.72E-10	9.59E-10	6.42E-12	1.39E-03
Total	1.21E-09	3.18E-12	2.06E-14	2.29E-16	1.27E-15	8.54E-18	1.21E-09	1.65E-03	4.00E-06	3.47E-08	3.85E-10	2.15E-09	1.44E-11	1.65E-03
Offsite Location F														
Uranium-234	5.57E-14	7.48E-13	4.21E-15	6.33E-17	3.14E-16	1.62E-18	8.08E-13	7.60E-08	9.35E-07	8.08E-09	1.21E-10	6.02E-10	3.11E-12	1.02E-06
Uranium-235	1.84E-10	4.33E-14	2.77E-16	4.16E-18	2.06E-17	1.07E-19	1.84E-10	2.34E-04	5.42E-08	4.93E-10	7.43E-12	3.68E-11	1.90E-13	2.34E-04
Uranium-238	9.26E-10	5.61E-13	4.68E-15	7.04E-17	3.49E-16	1.80E-18	9.27E-10	1.27E-03	7.05E-07	6.89E-09	1.04E-10	5.14E-10	2.66E-12	1.27E-03
Total	1.11E-09	1.35E-12	9.17E-15	1.38E-16	6.84E-16	3.53E-18	1.11E-09	1.50E-03	1.69E-06	1.55E-08	2.32E-10	1.15E-09	5.96E-12	1.51E-03

Notes:

^a Potential radiological cancer risks and doses were calculated for hypothetical offsite resident farmer receptors over an evaluation period of 1,000 years using DOE's RESRAD-OFFSITE model (version 4.0). The results presented for the uranium isotopes are those that occur at the time of maximum total risk and dose throughout the 1,000-year period of evaluation (i.e., year zero) and include contributions from the respective decay chain progenies.

^b Risks and doses resulting from exposures via pathways affected by releases to groundwater are all zero and are therefore, not presented. All receptor locations are either upgradient or cross-gradient from the flow of contaminants released from the evaporation pond, which are insignificant during the time of remediation (see Figure D-5).

^c Attenuations of contaminants during atmospheric transport to each offsite location were calculated from the results of RESRAD-OFFSITE modeling and applied to chemical concentrations in pond sediment to calculate offsite air and soil concentrations. The offsite air and soil chemical concentrations were compared to residential risk-based screening levels and were found to be below the screening levels. Therefore, there are no chemical COPCs identified in offsite soil and air from atmospheric transport of sediment dusts from the pond under Alternative 1.

Table D-16-4
Chemical Noncancer Hazards
Offsite Resident Farmer Exposures to Groundwater at Downgradient Receptor Location #0 (Downgradient Edge of Evaporation Pond), Remedial Alternative 1
Shiprock, New Mexico, Disposal Site

Medium	Exposure Medium	COPC	Noncancer Hazards for Chronic Exposures (Unitless) ^b																									
			Primary Target Organ(s) / Critical Effects from Chronic Exposures	Target Organ / Critical Effects Reference	Hazard Quotients - Resident Farmer Child (Ages 0 to 6 Years)								Hazard Quotients - Resident Farmer Adult								Hazard Quotients - Resident Farmer (Age-Adjusted Aggregate Receptor)							
					Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index	Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index	Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index			
Offsite Groundwater	Drinking Water	Nitrate as Nitrogen	Blood	ATSDR (2004)	---	6.5E+00	2.9E-02	---	---	---	6.5E+00	---	3.9E+00	2.2E-02	---	---	---	3.9E+00	---	4.5E+00	2.4E-02	---	---	---	4.5E+00			
		Chemical Total:	---	---	---	6.5E+00	2.9E-02	---	---	---	6.5E+00	---	3.9E+00	2.2E-02	---	---	---	3.9E+00	---	4.5E+00	2.4E-02	---	---	---	4.5E+00			
		Exposure Medium Total:	---	---	---	6.5E+00	2.9E-02	---	---	---	6.5E+00	---	3.9E+00	2.2E-02	---	---	---	3.9E+00	---	4.5E+00	2.4E-02	---	---	---	4.5E+00			
	Medium		---	---	---	6.5E+00	2.9E-02	---	---	---	6.5E+00	---	3.9E+00	2.2E-02	---	---	---	3.9E+00	---	4.5E+00	2.4E-02	---	---	---	4.5E+00			
	Air (Volatilized COPCs During Showering)	Nitrate as Nitrogen	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
		Exposure Medium Total:	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
	Medium		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
	Resident Farmer Receptor Total :		---	---	---	6.5E+00	2.9E-02	---	---	---	6.5E+00	---	3.9E+00	2.2E-02	---	---	---	3.9E+00	---	4.5E+00	2.4E-02	---	---	---	4.5E+00			

Notes:

^a Noncancer hazards were calculated using ORNL's online calculator on the RAIS website: <https://rais.ornl.gov/>.

^b Inhalation HQs and HIs are not calculated due to no available RfC values for nitrate as nitrogen.

^b HQs and HIs are not calculated for the homegrown produce, meat and milk ingestion routes of exposure due to no available soil-to-plant, soil-to-beef and soil-to-dairy transfer factors, respectively, for nitrate as nitrogen.

Hazard quotients/indices presented in bold font exceed the EPA's target limit of 1.

Table D-16-5 Chemical Noncancer Hazards Offsite Resident Farmer Exposures to Groundwater at Downgradient Receptor Location #1 (Pumping Well 1093R Location), Remedial Alternative 1 Shiprock, New Mexico, Disposal Site																											
Medium	Exposure Medium	COPC	Noncancer Hazards for Chronic Exposures (Unitless) ^a																								
			Primary Target Organ(s) / Critical Effects from Chronic Exposures	Target Organ / Critical Effects Reference	Hazard Quotients - Resident Farmer Child (Ages 0 to 6 Years)								Hazard Quotients - Resident Farmer Adult								Hazard Quotients - Resident Farmer (Age-Adjusted Aggregate Receptor)						
					Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index	Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index	Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index		
Offsite Groundwater	Drinking Water	Nitrate as Nitrogen	Blood	ATSDR (2004)	---	6.2E+00	2.7E-02	---	---	---	6.2E+00	---	3.7E+00	2.1E-02	---	---	---	3.7E+00	---	4.3E+00	2.3E-02	---	---	---	4.3E+00		
		Chemical Total:	---	---	---	6.2E+00	2.7E-02	---	---	---	6.2E+00	---	3.7E+00	2.1E-02	---	---	---	3.7E+00	---	4.3E+00	2.3E-02	---	---	---	4.3E+00		
		Exposure Medium Total:	---	---	---	6.2E+00	2.7E-02	---	---	---	6.2E+00	---	3.7E+00	2.1E-02	---	---	---	3.7E+00	---	4.3E+00	2.3E-02	---	---	---	4.3E+00		
	Medium		---	---	---	6.2E+00	2.7E-02	---	---	---	6.2E+00	---	3.7E+00	2.1E-02	---	---	---	3.7E+00	---	4.3E+00	2.3E-02	---	---	---	4.3E+00		
	Air (Volatilized COPCs During Showering)	Nitrate as Nitrogen	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
		Exposure Medium Total:	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
	Medium		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
	Resident Farmer Receptor Total :			---	---	---	6.2E+00	2.7E-02	---	---	---	6.2E+00	---	3.7E+00	2.1E-02	---	---	---	3.7E+00	---	4.3E+00	2.3E-02	---	---	---	4.3E+00	

Notes:

^a Noncancer hazards were calculated using ORNL's online calculator on the RAIS website: <https://rais.ornl.gov/>.

^b Inhalation HQs and HIs are not calculated due to no available RfC values for nitrate as nitrogen.

^b HQs and HIs are not calculated for the homegrown produce, meat and milk ingestion routes of exposure due to no available soil-to-plant, soil-to-beef and soil-to-dairy transfer factors, respectively, for nitrate as nitrogen.

Hazard quotients/indices presented in bold font exceed the EPA's target limit of 1.

Table D-16-6
Chemical Noncancer Hazards
Offsite Resident Farmer Exposures to Groundwater at Downgradient Receptor Location #2 (San Juan River), Remedial Alternative 1
Shiprock, New Mexico, Disposal Site

Medium	Exposure Medium	COPC	Noncancer Hazards for Chronic Exposures (Unitless) ^a																									
			Primary Target Organ(s) / Critical Effects from Chronic Exposures	Target Organ / Critical Effects Reference	Hazard Quotients - Resident Farmer Child (Ages 0 to 6 Years)								Hazard Quotients - Resident Farmer Adult								Hazard Quotients - Resident Farmer (Age-Adjusted Aggregate Receptor)							
					Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index	Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index	Volatiles Inhalation ^b	Water Ingestion	Dermal Contact	Homegrown Produce Ingestion ^c	Homegrown Meat Ingestion ^c	Homegrown Milk Ingestion ^c	Total Hazard Index			
Offsite Groundwater	Drinking Water	Nitrate as Nitrogen	Blood	ATSDR (2004)	---	1.2E+00	5.1E-03	---	---	---	1.2E+00	---	7.0E-01	3.8E-03	---	---	---	7.0E-01	---	8.0E-01	4.3E-03	---	---	---	8.1E-01			
		Chemical Total:	---	---	---	1.2E+00	5.1E-03	---	---	---	1.2E+00	---	7.0E-01	3.8E-03	---	---	---	7.0E-01	---	8.0E-01	4.3E-03	---	---	---	8.1E-01			
		Exposure Medium Total:	---	---	---	1.2E+00	5.1E-03	---	---	---	1.2E+00	---	7.0E-01	3.8E-03	---	---	---	7.0E-01	---	8.0E-01	4.3E-03	---	---	---	8.1E-01			
	Medium		---	---	---	1.2E+00	5.1E-03	---	---	---	1.2E+00	---	7.0E-01	3.8E-03	---	---	---	7.0E-01	---	8.0E-01	4.3E-03	---	---	---	8.1E-01			
	Air (Volatilized COPCs During Showering)	Nitrate as Nitrogen	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
		Exposure Medium Total:	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
	Medium		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---			
	Resident Farmer Receptor Total :			---	---	---	1.2E+00	5.1E-03	---	---	---	1.2E+00	---	7.0E-01	3.8E-03	---	---	---	7.0E-01	---	8.0E-01	4.3E-03	---	---	---	8.1E-01		

Notes:

^a Noncancer hazards were calculated using ORNL's online calculator on the RAIS website: <https://rais.ornl.gov/>.

^b Inhalation HQs and HIs are not calculated due to no available RfC values for nitrate as nitrogen.

^b HQs and HIs are not calculated for the homegrown produce, meat and milk ingestion routes of exposure due to no available soil-to-plant, soil-to-beef and soil-to-dairy transfer factors, respectively, for nitrate as nitrogen.

Hazard quotients/indices presented in bold font exceed the EPA's target limit of 1.

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ATTACHMENT D-17

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Table D-17-1 Radiological Cancer Risks and Doses, Chemical Cancer Risks and Chemical Noncancer Hazards Pond Remediation Worker Exposures to Dry Sediment at the Groundwater Evaporation Pond During Remediation of Groundwater Evaporation Pond Sediment, Remedial Alternatives 2/3 Shiprock, New Mexico, Disposal Site																		
Medium	Exposure Medium	COPC	Excess Lifetime Cancer Risks (Unitless)					Radiological Doses (mrem/year)				Noncancer Hazards						
			External Radiation	Dust Inhalation	Ingestion	Dermal Contact	Total	External Radiation	Dust Inhalation	Soil Ingestion	Total	Primary Target Organ(s) / Critical Effects from Subchronic Exposures	Target Organ/ Critical Effects Reference	Hazard Quotients			Total Hazard Index	
														Dust Inhalation	Ingestion	Dermal Contact		
Sediment	Sediment ^a	Radionuclides ^b																
		Uranium-234	9.4E-10	---	4.3E-08	---	4.4E-08	1.3E-03	---	8.2E-02	8.3E-02	---	---	---	---	---	---	---
		Uranium-235	1.3E-07	---	2.8E-09	---	1.4E-07	1.7E-01	---	5.0E-03	1.8E-01	---	---	---	---	---	---	---
		Uranium-238	3.8E-07	---	4.7E-08	---	4.2E-07	5.1E-01	---	7.0E-02	5.8E-01	---	---	---	---	---	---	---
		Radionuclide Total:	5.1E-07	---	9.3E-08	---	6.0E-07	6.8E-01	---	1.6E-01	8.4E-01	---	---	---	---	---	---	---
		Chemicals ^c																
		Manganese	---	---	---	---	---	---	---	---	---	Neurological	IRIS	---	2.0E-02	---	---	2.0E-02
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	---	5.7E-01	---	---	5.7E-01
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	---	5.9E-01	---	---	5.9E-01
		Exposure Medium Total:	5.1E-07	---	9.3E-08	---	6.0E-07	6.8E-01	---	1.6E-01	8.4E-01	---	---	---	5.9E-01	---	---	5.9E-01
	Air (Pond Sediment Dust Emissions from Wind Erosion)	Radionuclides ^b																
		Uranium-234	---	5.2E-06	---	---	5.2E-06	---	6.5E+00	---	6.5E+00	---	---	---	---	---	---	---
		Uranium-235	---	3.0E-07	---	---	3.0E-07	---	3.8E-01	---	3.8E-01	---	---	---	---	---	---	---
		Uranium-238	---	3.9E-06	---	---	3.9E-06	---	4.9E+00	---	4.9E+00	---	---	---	---	---	---	---
		Radionuclide Total:	---	9.4E-06	---	---	9.4E-06	---	1.2E+01	---	1.2E+01	---	---	---	---	---	---	---
		Chemicals ^c																
		Manganese	---	---	---	---	---	---	---	---	---	Neurological	IRIS	6.7E-01	---	---	---	6.7E-01
		Uranium	---	---	---	---	---	---	---	---	---	Renal	ATSDR	8.0E-02	---	---	---	8.0E-02
		Chemical Total:	---	---	---	---	---	---	---	---	---	---	---	7.4E-01	---	---	---	7.4E-01
		Exposure Medium Total:	---	9.4E-06	---	---	9.4E-06	---	1.2E+01	---	1.2E+01	---	---	7.4E-01	---	---	---	7.4E-01
	Medium Total:		5.1E-07	9.4E-06	9.3E-08	---	1.0E-05	6.8E-01	1.2E+01	1.6E-01	1.3E+01	---	---	7.4E-01	5.9E-01	---	---	1.3E+00
	Onsite Remediation Worker Total :		5.1E-07	9.4E-06	9.3E-08	---	1.0E-05	6.8E-01	1.2E+01	1.6E-01	1.3E+01	---	---	7.4E-01	5.9E-01	---	---	1.3E+00
												Total Neuological HI Across All Media =				6.9E-01		
												Total Renal HI Across All Media =				6.5E-01		

Notes:

^a Dry sediment, rather than wet sediment under water is evaluated because of dewatering of the groundwater evaporation pond prior to remediation. Therefore, onsite remediation worker exposures to surface water are not evaluated. Additionally, remediation workers are expected to be using PPE (e.g., waders) and following health and safety requirements to minimize/prevent exposures. However, it is hypothetically assumed that workers have no PPE or health and safety practices in order to maximize exposures in this assessment in order to provide health-conservative estimates of potential health risks. For the purpose of the evaluation, the duration of the remediation is assumed to last for one year; therefore, subchronic exposures are evaluated.

^b Radiological risks and doses were calculated using DOE's RESRAD-ONSITE model (version 7.2) and include contributions from respective decay chain progenies. Risks and doses were evaluated over a one-year period of remediation, with the results representing the time of maximum total risk and dose.

^c Chemical cancer risks and noncancer hazards were calculated using EPA's online Regional Screening Levels calculator available at: https://epa-prgs.oml.gov/cgi-bin/chemicals/csl_search (EPA, 2022b).

Cancer risks presented in bold font exceed the lower limit of EPA's target risk range of 1E-06 to 1E-04 (i.e., 1E-06). Hazard quotients/indices presented in bold font exceed the EPA's target limit of 1.

Table D-17-2
Radiological Cancer Risks and Doses
Resident Farmer Exposures to Offsite Soil Impacted by Air Deposition of Dusts During Remediation of Groundwater Evaporation Pond Sediment, Remedial Alternatives 2/3
Shiprock, New Mexico, Disposal Site

COPC ^c	Pathway-Specific, Excess Lifetime Cancer Risk ^{a,b}							Pathway-Specific Dose (mrem/year) ^{a,b}						
	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total
Offsite Location A														
Uranium-234	6.25E-16	1.18E-09	8.17E-12	1.25E-13	5.44E-13	7.15E-15	1.19E-09	8.52E-10	1.48E-03	1.57E-05	2.41E-07	1.04E-06	1.37E-08	1.50E-03
Uranium-235	7.48E-13	6.83E-11	5.37E-13	8.25E-15	3.58E-14	4.70E-16	6.96E-11	9.51E-07	8.56E-05	9.58E-07	1.48E-08	6.38E-08	8.39E-10	8.76E-05
Uranium-238	3.66E-12	8.86E-10	9.09E-12	1.39E-13	6.05E-13	7.95E-15	9.00E-10	5.03E-06	1.11E-03	1.34E-05	2.05E-07	8.92E-07	1.17E-08	1.13E-03
Total	4.41E-12	2.13E-09	1.78E-11	2.72E-13	1.18E-12	1.56E-14	2.16E-09	5.98E-06	2.68E-03	3.01E-05	4.61E-07	2.00E-06	2.62E-08	2.71E-03
Offsite Location B														
Uranium-234	5.33E-14	5.82E-09	3.60E-11	5.15E-13	2.63E-12	3.70E-14	5.86E-09	7.27E-08	7.28E-03	6.90E-05	9.89E-07	5.05E-06	7.10E-08	7.36E-03
Uranium-235	1.68E-10	3.36E-10	2.36E-12	3.39E-14	1.73E-13	2.43E-15	5.07E-10	2.14E-04	4.22E-04	4.22E-06	6.07E-08	3.09E-07	4.34E-09	6.41E-04
Uranium-238	8.47E-10	4.36E-09	4.00E-11	5.73E-13	2.93E-12	4.11E-14	5.25E-09	1.16E-03	5.48E-03	5.89E-05	8.44E-07	4.31E-06	6.06E-08	6.70E-03
Total	1.02E-09	1.05E-08	7.84E-11	1.12E-12	5.73E-12	8.05E-14	1.16E-08	1.37E-03	1.32E-02	1.32E-04	1.89E-06	9.67E-06	1.36E-07	1.47E-02
Offsite Location C														
Uranium-234	7.53E-15	1.45E-08	6.95E-11	1.93E-12	8.01E-12	8.98E-14	1.46E-08	1.03E-08	1.81E-02	1.33E-04	3.70E-06	1.54E-05	1.72E-07	1.83E-02
Uranium-235	8.49E-12	8.38E-10	4.57E-12	1.27E-13	5.27E-13	5.90E-15	8.52E-10	1.08E-05	1.05E-03	8.15E-06	2.27E-07	9.39E-07	1.05E-08	1.07E-03
Uranium-238	4.15E-11	1.09E-08	7.73E-11	2.15E-12	8.91E-12	9.98E-14	1.10E-08	5.70E-05	1.37E-02	1.14E-04	3.16E-06	1.31E-05	1.47E-07	1.39E-02
Total	5.00E-11	2.62E-08	1.51E-10	4.21E-12	1.74E-11	1.96E-13	2.65E-08	6.78E-05	3.29E-02	2.55E-04	7.09E-06	2.94E-05	3.30E-07	3.32E-02
Offsite Location D														
Uranium-234	1.55E-14	1.52E-08	7.10E-11	2.28E-12	1.15E-11	9.34E-14	1.53E-08	2.12E-08	1.90E-02	1.36E-04	4.38E-06	2.21E-05	1.79E-07	1.92E-02
Uranium-235	3.40E-11	8.80E-10	4.67E-12	1.50E-13	7.58E-13	6.14E-15	9.20E-10	4.32E-05	1.10E-03	8.33E-06	2.69E-07	1.35E-06	1.10E-08	1.15E-03
Uranium-238	1.70E-10	1.14E-08	7.90E-11	2.53E-12	1.28E-11	1.04E-13	1.17E-08	2.33E-04	1.43E-02	1.16E-04	3.73E-06	1.89E-05	1.53E-07	1.47E-02
Total	2.04E-10	2.75E-08	1.55E-10	4.96E-12	2.51E-11	2.04E-13	2.79E-08	2.76E-04	3.44E-02	2.60E-04	8.38E-06	4.24E-05	3.43E-07	3.50E-02
Offsite Location E														
Uranium-234	7.69E-14	4.22E-08	2.26E-10	2.52E-12	1.40E-11	2.79E-13	4.24E-08	1.05E-07	5.28E-02	4.34E-04	4.85E-06	2.70E-05	5.35E-07	5.33E-02
Uranium-235	2.03E-10	2.44E-09	1.49E-11	1.66E-13	9.23E-13	1.83E-14	2.66E-09	2.58E-04	3.06E-03	2.65E-05	2.97E-07	1.65E-06	3.27E-08	3.35E-03
Uranium-238	1.02E-09	3.16E-08	2.52E-10	2.81E-12	1.56E-11	3.10E-13	3.29E-08	1.40E-03	3.98E-02	3.71E-04	4.14E-06	2.30E-05	4.56E-07	4.16E-02
Total	1.22E-09	7.62E-08	4.93E-10	5.50E-12	3.05E-11	6.07E-13	7.80E-08	1.66E-03	9.57E-02	8.32E-04	9.29E-06	5.17E-05	1.02E-06	9.82E-02
Offsite Location F														
Uranium-234	6.26E-14	1.79E-08	1.01E-10	1.53E-12	7.53E-12	1.15E-13	1.80E-08	8.54E-08	2.24E-02	1.93E-04	2.93E-06	1.45E-05	2.21E-07	2.26E-02
Uranium-235	1.85E-10	1.03E-09	6.63E-12	1.00E-13	4.95E-13	7.58E-15	1.22E-09	2.35E-04	1.30E-03	1.18E-05	1.80E-07	8.83E-07	1.35E-08	1.55E-03
Uranium-238	9.29E-10	1.34E-08	1.12E-10	1.70E-12	8.37E-12	1.28E-13	1.45E-08	1.28E-03	1.69E-02	1.65E-04	2.50E-06	1.23E-05	1.89E-07	1.84E-02
Total	1.11E-09	3.23E-08	2.20E-10	3.33E-12	1.64E-11	2.51E-13	3.37E-08	1.52E-03	4.06E-02	3.70E-04	5.61E-06	2.77E-05	4.24E-07	4.25E-02

Notes:

^a Potential radiological cancer risks and doses were calculated for hypothetical offsite resident farmer receptors over an evaluation period of one year (assumed to be the duration of remediation) using DOE's RESRAD-OFFSITE model (version 4.0). The results presented for the uranium isotopes include contributions from the respective decay chain progenies.

^b Risks and doses resulting from exposures via pathways affected by releases to groundwater are all zero and are therefore, not presented. All receptor locations are either upgradient or cross-gradient from the flow of contaminants released from the evaporation pond, which are insignificant during the time of remediatin (see Figure D-5).

^c There are no chemical COPCs identified in offsite soil and air from atmospheric transport of sediment dusts from the pond under Alternative 1. Attenuations of the uranium isotopes during atmospheric transport to each offsite location were calculated from the results of RESRAD-OFFSITE modeling and applied to chemical concentrations in pond sediment to calculate offsite air and soil concentrations. The offsite air and soil chemical concentrations were compared to residential risk-based screening levels and were found to be below the screening levels.

Table D-17-3
Radiological Cancer Risks and Doses
Resident Farmer Exposures to Offsite Soil After Completion of Remediation of Groundwater Evaporation Pond Sediment, Remedial Alternatives 2/3
Shiprock, New Mexico, Disposal Site

COPC ^c	Pathway-Specific, Excess Lifetime Cancer Risk ^{a,b}							Pathway-Specific Dose (mrem/year) ^{a,b}						
	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total
Offsite Location A														
Uranium-234	5.58E-15	2.59E-16	1.31E-13	4.08E-14	1.04E-13	1.19E-13	4.00E-13	3.48E-10	1.61E-11	1.25E-08	3.90E-09	9.94E-09	1.14E-08	3.81E-08
Uranium-235	7.49E-13	1.47E-17	8.45E-15	2.66E-15	6.71E-15	7.67E-15	7.75E-13	4.43E-08	9.17E-13	7.50E-10	2.35E-10	5.97E-10	6.82E-10	4.66E-08
Uranium-238	2.04E-12	1.97E-16	1.47E-13	4.61E-14	1.17E-13	1.34E-13	2.48E-12	1.30E-07	1.23E-11	1.08E-08	3.38E-09	8.62E-09	9.85E-09	1.63E-07
Total	2.79E-12	4.70E-16	2.86E-13	8.95E-14	2.28E-13	2.60E-13	3.66E-12	1.75E-07	2.94E-11	2.41E-08	7.52E-09	1.92E-08	2.19E-08	2.47E-07
Offsite Location B														
Uranium-234	2.64E-14	1.23E-15	6.18E-13	1.93E-13	4.92E-13	5.62E-13	1.89E-12	1.65E-09	7.64E-11	5.92E-08	1.85E-08	4.71E-08	5.38E-08	1.80E-07
Uranium-235	3.62E-12	7.10E-17	4.08E-14	1.28E-14	3.24E-14	3.71E-14	3.75E-12	2.14E-07	4.43E-12	3.62E-09	1.13E-09	2.88E-09	3.30E-09	2.25E-07
Uranium-238	9.47E-12	9.15E-16	6.85E-13	2.14E-13	5.45E-13	6.23E-13	1.15E-11	6.04E-07	5.73E-11	5.03E-08	1.57E-08	4.01E-08	4.58E-08	7.56E-07
Total	1.31E-11	2.21E-15	1.34E-12	4.20E-13	1.07E-12	1.22E-12	1.72E-11	8.20E-07	1.38E-10	1.13E-07	3.53E-08	9.00E-08	1.03E-07	1.16E-06
Offsite Location C														
Uranium-234	6.46E-14	2.99E-15	1.51E-12	4.72E-13	1.20E-12	1.38E-12	4.63E-12	4.02E-09	1.87E-10	1.45E-07	4.52E-08	1.15E-07	1.32E-07	4.41E-07
Uranium-235	8.74E-12	1.72E-16	9.86E-14	3.10E-14	7.82E-14	8.95E-14	9.04E-12	5.17E-07	1.07E-11	8.75E-09	2.74E-09	6.96E-09	7.96E-09	5.44E-07
Uranium-238	2.40E-11	2.32E-15	1.74E-12	5.42E-13	1.38E-12	1.58E-12	2.92E-11	1.53E-06	1.45E-10	1.27E-07	3.98E-08	1.01E-07	1.16E-07	1.91E-06
Total	3.28E-11	5.48E-15	3.34E-12	1.04E-12	2.66E-12	3.04E-12	4.29E-11	2.05E-06	3.43E-10	2.81E-07	8.77E-08	2.23E-07	2.55E-07	2.90E-06
Offsite Location D														
Uranium-234	6.75E-14	3.13E-15	1.58E-12	4.94E-13	1.26E-12	1.44E-12	4.84E-12	4.21E-09	1.95E-10	1.51E-07	4.72E-08	1.20E-07	1.38E-07	4.61E-07
Uranium-235	9.37E-12	1.84E-16	1.06E-13	3.32E-14	8.38E-14	9.59E-14	9.69E-12	5.54E-07	1.15E-11	9.37E-09	2.93E-09	7.46E-09	8.52E-09	5.82E-07
Uranium-238	2.40E-11	2.32E-15	1.74E-12	5.42E-13	1.38E-12	1.58E-12	2.92E-11	1.53E-06	1.45E-10	1.27E-07	3.98E-08	1.01E-07	1.16E-07	1.91E-06
Total	3.34E-11	5.63E-15	3.42E-12	1.07E-12	2.72E-12	3.11E-12	4.37E-11	2.09E-06	3.52E-10	2.88E-07	9.00E-08	2.29E-07	2.62E-07	2.96E-06
Offsite Location E														
Uranium-234	1.76E-13	8.17E-15	4.12E-12	1.29E-12	3.28E-12	3.75E-12	1.26E-11	1.10E-08	5.09E-10	3.94E-07	1.23E-07	3.14E-07	3.59E-07	1.20E-06
Uranium-235	2.44E-11	4.78E-16	2.75E-13	8.64E-14	2.18E-13	2.49E-13	2.52E-11	1.44E-06	2.98E-11	2.44E-08	7.62E-09	1.94E-08	2.22E-08	1.51E-06
Uranium-238	6.35E-11	6.14E-15	4.60E-12	1.44E-12	3.66E-12	4.18E-12	7.74E-11	4.05E-06	3.85E-10	3.38E-07	1.06E-07	2.69E-07	3.07E-07	5.07E-06
Total	8.80E-11	1.48E-14	8.99E-12	2.81E-12	7.16E-12	8.18E-12	1.15E-10	5.50E-06	9.24E-10	7.56E-07	2.36E-07	6.02E-07	6.88E-07	7.79E-06
Offsite Location F														
Uranium-234	7.34E-14	3.40E-15	1.72E-12	5.36E-13	1.37E-12	1.56E-12	5.26E-12	4.57E-09	2.12E-10	1.64E-07	5.13E-08	1.31E-07	1.50E-07	5.01E-07
Uranium-235	9.99E-12	1.96E-16	1.13E-13	3.54E-14	8.94E-14	1.02E-13	1.03E-11	5.91E-07	1.22E-11	1.00E-08	3.13E-09	7.95E-09	9.09E-09	6.21E-07
Uranium-238	2.64E-11	2.55E-15	1.91E-12	5.96E-13	1.52E-12	1.74E-12	3.21E-11	1.68E-06	1.60E-10	1.40E-07	4.38E-08	1.12E-07	1.28E-07	2.11E-06
Total	3.64E-11	6.15E-15	3.74E-12	1.17E-12	2.97E-12	3.40E-12	4.77E-11	2.28E-06	3.84E-10	3.14E-07	9.82E-08	2.50E-07	2.86E-07	3.23E-06

Notes:

^a Potential post-remedy radiological cancer risks and doses were calculated for hypothetical offsite resident farmer receptors using DOE's RESRAD-ONSITE model (version 7.2). Maximum post-remedy surface soil concentrations at each offsite location following deposition were calculated based on the modeled attenuation of sediment contaminants in dust released during atmospheric transport from the evaporation pond during remediation, to each offsite location. Location-specific attenuations are based on dispersion and deposition calculations performed using the RESRAD-OFFSITE model (version 4.0). The risks and doses presented are those that occur at the time of the maximum total risk and dose calculated for each area over a 1,000-year period of evaluation using the RESRAD-ONSITE model and include contributions from the respective decay chain progenies.

^b Risks and doses resulting from exposures via pathways affected by releases to groundwater are all zero and are therefore, not presented. All receptor locations are either upgradient or cross-gradient from the flow of contaminants released from the evaporation pond, which are insignificant during the time of remediation (see Figure D-5).

^c There are no chemical COPCs identified in offsite soil and air from atmospheric transport of sediment dusts from the pond under Alternative 1. Attenuations of the uranium isotopes during atmospheric transport to each offsite location were calculated from the results of RESRAD-OFFSITE modeling and applied to chemical concentrations in pond sediment to calculate offsite air and soil concentrations. The offsite air and soil chemical concentrations were compared to residential risk-based screening levels and were found to be below the screening levels.

Table D-17-4
Radiological Cancer Risks and Doses
Total of Resident Farmer Exposures to Offsite Soil During Remediaton and After Completion of Remediation of Groundwater Evaporation Pond Sediment, Remedial Alternatives 2/3
Shiprock, New Mexico, Disposal Site

COPC ^c	Pathway-Specific, Excess Lifetime Cancer Risk ^{a,b}							Pathway-Specific Dose (mrem/year) ^{a,b}						
	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total	External Radiation	Dust Inhalation	Homegrown Produce Ingestion	Homegrown Meat Ingestion	Homegrown Milk Ingestion	Soil Ingestion	Total
Offsite Location A														
Uranium-234	6.20E-15	1.18E-09	8.30E-12	1.66E-13	6.48E-13	1.26E-13	1.19E-09	1.20E-09	1.48E-03	1.57E-05	2.45E-07	1.05E-06	2.51E-08	1.50E-03
Uranium-235	1.50E-12	6.83E-11	5.45E-13	1.09E-14	4.25E-14	8.14E-15	7.04E-11	9.95E-07	8.56E-05	9.59E-07	1.50E-08	6.44E-08	1.52E-09	8.76E-05
Uranium-238	5.70E-12	8.86E-10	9.24E-12	1.85E-13	7.22E-13	1.42E-13	9.02E-10	5.16E-06	1.11E-03	1.34E-05	2.08E-07	9.01E-07	2.16E-08	1.13E-03
Total	7.20E-12	2.13E-09	1.81E-11	3.62E-13	1.41E-12	2.76E-13	2.16E-09	6.16E-06	2.68E-03	3.01E-05	4.68E-07	2.01E-06	4.81E-08	2.71E-03
Offsite Location B														
Uranium-234	7.97E-14	5.82E-09	3.66E-11	7.08E-13	3.12E-12	5.99E-13	5.86E-09	7.43E-08	7.28E-03	6.91E-05	1.01E-06	5.10E-06	1.25E-07	7.36E-03
Uranium-235	1.72E-10	3.36E-10	2.40E-12	4.67E-14	2.05E-13	3.95E-14	5.10E-10	2.14E-04	4.22E-04	4.22E-06	6.18E-08	3.12E-07	7.64E-09	6.41E-04
Uranium-238	8.56E-10	4.36E-09	4.07E-11	7.87E-13	3.48E-12	6.64E-13	5.26E-09	1.16E-03	5.48E-03	5.90E-05	8.60E-07	4.35E-06	1.06E-07	6.70E-03
Total	1.03E-09	1.05E-08	7.97E-11	1.54E-12	6.80E-12	1.30E-12	1.16E-08	1.37E-03	1.32E-02	1.32E-04	1.93E-06	9.76E-06	2.39E-07	1.47E-02
Offsite Location C														
Uranium-234	7.21E-14	1.45E-08	7.10E-11	2.40E-12	9.21E-12	1.46E-12	1.46E-08	1.43E-08	1.81E-02	1.33E-04	3.75E-06	1.55E-05	3.04E-07	1.83E-02
Uranium-235	1.72E-11	8.38E-10	4.67E-12	1.58E-13	6.05E-13	9.54E-14	8.61E-10	1.13E-05	1.05E-03	8.16E-06	2.30E-07	9.46E-07	1.85E-08	1.07E-03
Uranium-238	6.55E-11	1.09E-08	7.90E-11	2.69E-12	1.03E-11	1.68E-12	1.11E-08	5.85E-05	1.37E-02	1.14E-04	3.20E-06	1.32E-05	2.63E-07	1.39E-02
Total	8.28E-11	2.62E-08	1.55E-10	5.25E-12	2.01E-11	3.24E-12	2.65E-08	6.99E-05	3.29E-02	2.55E-04	7.17E-06	2.97E-05	5.85E-07	3.32E-02
Offsite Location D														
Uranium-234	8.30E-14	1.52E-08	7.26E-11	2.77E-12	1.28E-11	1.53E-12	1.53E-08	2.54E-08	1.90E-02	1.36E-04	4.43E-06	2.22E-05	3.17E-07	1.92E-02
Uranium-235	4.34E-11	8.80E-10	4.78E-12	1.83E-13	8.42E-13	1.02E-13	9.29E-10	4.38E-05	1.10E-03	8.34E-06	2.72E-07	1.36E-06	1.95E-08	1.15E-03
Uranium-238	1.94E-10	1.14E-08	8.07E-11	3.07E-12	1.42E-11	1.68E-12	1.17E-08	2.35E-04	1.43E-02	1.16E-04	3.77E-06	1.90E-05	2.69E-07	1.47E-02
Total	2.37E-10	2.75E-08	1.58E-10	6.03E-12	2.78E-11	3.31E-12	2.79E-08	2.78E-04	3.44E-02	2.61E-04	8.47E-06	4.26E-05	6.05E-07	3.50E-02
Offsite Location E														
Uranium-234	2.53E-13	4.22E-08	2.30E-10	3.81E-12	1.73E-11	4.03E-12	4.25E-08	1.16E-07	5.28E-02	4.34E-04	4.97E-06	2.73E-05	8.94E-07	5.33E-02
Uranium-235	2.27E-10	2.44E-09	1.52E-11	2.52E-13	1.14E-12	2.68E-13	2.68E-09	2.59E-04	3.06E-03	2.65E-05	3.05E-07	1.67E-06	5.49E-08	3.35E-03
Uranium-238	1.08E-09	3.16E-08	2.57E-10	4.25E-12	1.93E-11	4.49E-12	3.30E-08	1.40E-03	3.98E-02	3.71E-04	4.25E-06	2.33E-05	7.63E-07	4.16E-02
Total	1.31E-09	7.62E-08	5.02E-10	8.31E-12	3.77E-11	8.79E-12	7.81E-08	1.66E-03	9.57E-02	8.32E-04	9.52E-06	5.23E-05	1.71E-06	9.82E-02
Offsite Location F														
Uranium-234	1.36E-13	1.79E-08	1.03E-10	2.07E-12	8.90E-12	1.68E-12	1.80E-08	9.00E-08	2.24E-02	1.93E-04	2.98E-06	1.46E-05	3.71E-07	2.26E-02
Uranium-235	1.95E-10	1.03E-09	6.74E-12	1.35E-13	5.84E-13	1.10E-13	1.23E-09	2.36E-04	1.30E-03	1.18E-05	1.83E-07	8.91E-07	2.26E-08	1.55E-03
Uranium-238	9.55E-10	1.34E-08	1.14E-10	2.30E-12	9.89E-12	1.86E-12	1.45E-08	1.28E-03	1.69E-02	1.65E-04	2.54E-06	1.24E-05	3.17E-07	1.84E-02
Total	1.15E-09	3.23E-08	2.23E-10	4.50E-12	1.94E-11	3.65E-12	3.37E-08	1.52E-03	4.06E-02	3.70E-04	5.71E-06	2.79E-05	7.10E-07	4.25E-02

Notes:

^a Potential post-remedy radiological cancer risks and doses were calculated for hypothetical offsite resident farmer receptors using DOE's RESRAD-ONSITE model (version 7.2). Maximum post-remedy surface soil concentrations at each offsite location following deposition were calculated based on the modeled attenuation of sediment contaminants in dust released during atmospheric transport from the evaporation pond during remediation, to each offsite location. Location-specific attenuations are based on dispersion and deposition calculations performed using the RESRAD-OFFSITE model (version 4.0). The risks and doses presented are those that occur at the time of the maximum total risk and dose calculated for each area over a 1,000-year period of evaluation using the RESRAD-ONSITE model and include contributions from the respective decay chain progenies.

^b Risks and doses resulting from exposures via pathways affected by releases to groundwater are all zero and are therefore, not presented. All receptor locations are either upgradient or cross-gradient from the flow of contaminants released from the evaporation pond, which are insignificant during the time of remediation (see Figure D-5).

^c There are no chemical COPCs identified in offsite soil and air from atmospheric transport of sediment dusts from the pond under Alternative 1. Attenuations of the uranium isotopes during atmospheric transport to each offsite location were calculated from the results of RESRAD-OFFSITE modeling and applied to chemical concentrations in pond sediment to calculate offsite air and soil concentrations. The offsite air and soil chemical concentrations were compared to residential risk-based screening levels and were found to be below the screening levels.

**APPENDIX E:
SAMPLING AND ANALYSIS RESULTS FOR THE SHIPROCK EVAPORATION POND
DECOMMISSIONING PROJECT NOVEMBER 2022**

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SYS LOC CODE	SYS SAMPLE CODE	SAMPLE DATE	SAMPLE TYPE CODE	MATRIX CODE	PARENT SAMPLE CODE	ANALYTIC METHOD	ANALYSIS DATE	FRACTION	DILUTION FACTOR	CAS RN	CHEMICAL NAME	REPORT RESULT VALUE	REPORT METHOD	DETECTION LIMIT	REPORT REPORTING LIMIT	REPORT QUANTITATION LIMIT	REPORTABLE RESULT	DETECT FLAG	INTERPRETED QUALIFIERS	LAB QUALIFIERS	RESULT UNIT	VALIDATED YN
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	EPA 900.0/EPA 9310	12/14/2022	T		112587-47-2	Gross Beta	11.9		10.0			Yes	Y			pCi/g	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	EPA 9056	12/6/2022	N	10000	14808-79-8	Sulfate	329000	18300	55200			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	EPA 9056	12/6/2022	N	10000	16887-00-6	Chloride	33800	9930	27600			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	EPA 9056	12/6/2022	N	10000	NITRATE AS N	Nitrate as Nitrogen	17800	4550	13800			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	EPA 9056	12/7/2022	N	50	14797-65-0	Nitrite	22.8	22.8	69.0			Yes	N	J	U	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/13/2022	T	1	7439-95-4	Magnesium	32000	10.8	38.2			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/13/2022	T	1	7439-96-5	Manganese	29.2	0.255	1.27			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/13/2022	T	1	7440-09-7	Potassium	4490	8.15	31.9			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/13/2022	T	1	7440-24-6	Strontium	164	0.127	0.637			Yes	Y	J	N	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/13/2022	T	1	7440-66-6	Zinc	2.17	0.51	2.55			Yes	Y	J	B	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/13/2022	T	10	7440-23-5	Sodium	123000	89.2	319			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6010	12/14/2022	T	20	7440-70-2	Calcium	6950	304	637			Yes	Y	J		mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7439-92-1	Lead	0.033	0.033	0.200			Yes	N	J	UN	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7440-22-4	Silver	0.01	0.01	0.0500			Yes	N		U	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7440-38-2	Arsenic	0.05	0.05	0.300			Yes	N		U	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7440-39-3	Barium	0.044	0.01	0.0500			Yes	Y	J	BN	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7440-43-9	Cadmium	0.01	0.01	0.0500			Yes	N		U	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7440-47-3	Chromium	0.0115	0.01	0.100			Yes	Y		B	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW846 6010	12/14/2022	T	1	7782-49-2	Selenium	1.17	0.06	0.300			Yes	Y			mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6020	12/7/2022	T	2	7439-92-1	Lead	0.128	0.128	0.511			Yes	N		U	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6020	12/7/2022	T	2	7440-38-2	Arsenic	0.432	0.432	1.28			Yes	N		U	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6020	12/7/2022	T	2	7440-39-3	Barium	1.63	0.128	1.02			Yes	Y			mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6020	12/7/2022	T	2	7440-43-9	Cadmium	0.0256	0.0256	0.256			Yes	N		U	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6020	12/8/2022	T	2	7440-61-1	Uranium	24.7	0.0169	0.0511			Yes	Y	J	N	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 6020	12/8/2022	T	2	7782-49-2	Selenium	2	0.46	1.28			Yes	Y			mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 7470A	12/8/2022	T	1	7439-97-6	Mercury	0.00067	0.00067	0.00200			Yes	N		U	mg/L	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 7471	12/12/2022	T	1	7439-97-6	Mercury	0.00991	0.00991	0.0296			Yes	N		U	mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 9012	12/14/2022	N	1	CNCRCT	Reactive Cyanide	25000					Yes	N			mg/kg	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW-846 9045	12/15/2022	N	1	PH	pH	7.36	0.0100	0.100			Yes	Y	J	H	s.u.	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	SW8461020A	12/16/2022	N	1	FLASH-140	Flashpoint-140	75.0		75.0			Yes	Y	J		F	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	U-02-RC MODIFIED	12/13/2022	T	1	111-08-5	URANIUM-233,-234	4.48		1.00			Yes	Y	J		pCi/g	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	U-02-RC MODIFIED	12/13/2022	T	1	7440-61-1	Uranium	4.42		1.00			Yes	Y			pCi/g	Y
7006	SHP02-02.2301003-001	11/29/2022	D	SEDIMENT	SHP02-02.2301003-008	U-02-RC MODIFIED	12/13/2022	T	1	U-235+236	Uranium-235/236	0.302		1.00			Yes	Y	J		pCi/g	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT	SHP02-02.2301003-008	EPA 900.0/EPA 9310	12/14/2022	T	1	112587-46-1	Gross Alpha	7.32		4.00			Yes	Y	J		pCi/g	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		EPA 900.0/EPA 9310	12/14/2022	T	1	112587-46-1	Gross Alpha	18.7		4.00			Yes	Y			pCi/g	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		EPA 900.0/EPA 9310	12/14/2022	T	1	112587-47-2	Gross Beta	19.1		10.0			Yes	Y			pCi/g	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		EPA 9056	12/6/2022	N	10000	14808-79-8	Sulfate	579000	32400	97400			Yes	Y	J		mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		EPA 9056	12/7/2022	N	500	16887-00-6	Chloride	18100	877	2430			Yes	Y	J		mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		EPA 9056	12/7/2022	N	500	NITRATE AS N	Nitrate as Nitrogen	13000	402	2300			Yes	Y	J		mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		EPA 9056	12/7/2022	N	50	14797-65-0	Nitrite	40.2	40.2	122			Yes	N	J	U	mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7439-92-1	Lead	0.033	0.033	0.200			Yes	N	J	UN	mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7440-22-4	Silver	0.0119	0.01	0.0500			Yes	Y		B	mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7440-38-2	Arsenic	0.05	0.05	0.300			Yes	N		U	mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7440-39-3	Barium	0.0281	0.01	0.0500			Yes	Y		BN	mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7440-43-9	Cadmium	0.01	0.01	0.0500			Yes	N		U	mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7440-47-3	Chromium	0.013	0.01	0.100			Yes	Y		B	mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW846 6010	12/14/2022	T	1	7782-49-2	Selenium	0.894	0.06	0.300			Yes	Y			mg/L	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/13/2022	T	1	7439-95-4	Magnesium	37700	18.7	66.0			Yes	Y			mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/13/2022	T	1	7439-96-5	Manganese	31.3	0.44	2.20			Yes	Y			mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/13/2022	T	1	7440-09-7	Potassium	4940	14.1	55.0			Yes	Y			mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/13/2022	T	1	7440-24-6	Strontium	135	0.22	1.10			Yes	Y		N	mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/13/2022	T	1	7440-66-6	Zinc	2.68	0.88	4.40			Yes	Y		B	mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/13/2022	T	10	7440-23-5	Sodium	244000	154	550			Yes	Y			mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6010	12/14/2022	T	20	7440-70-2	Calcium	5770	352	1100			Yes	Y			mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6020	12/7/2022	T	2	7439-92-1	Lead	0.212	0.212	0.847			Yes	N		U	mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6020	12/7/2022	T	2	7440-38-2	Arsenic	0.715	0.715	2.12			Yes	N		U	mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6020	12/7/2022	T	2	7440-39-3	Barium	1.83	0.212	1.69			Yes	Y			mg/kg	Y
7000	SHP02-02.2301003-002	11/30/2022	F	SEDIMENT		SW-846 6020	12/7/2022	T	2	7440-43-9	Cadmium	0.0423	0.0423	0.423			Yes	N		U	mg/kg	Y
7000	SHP02-02.230100																					

7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-38-2	Arsenic	0.05	0.05	0.300	Yes	N			U	mg/L	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-39-3	Barium	0.0767	0.01	0.0500	Yes	Y			N	mg/L	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-43-9	Cadmium	0.01	0.01	0.0500	Yes	N			U	mg/L	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-47-3	Chromium	0.0149	0.01	0.100	Yes	Y			B	mg/L	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17782-49-2	Selenium	0.704	0.06	0.300	Yes	Y				mg/L	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17439-95-4	Magnesium	17600	11.8	41.6	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17439-96-5	Manganese	261	0.278	1.39	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17440-66-6	Zinc	14.1	0.555	2.78	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	107440-23-5	Sodium	148000	97.1	347	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/14/2022	T	207440-09-7	Potassium	2320	178	694	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/14/2022	T	207440-24-6	Strontium	1280	2.78	13.9	Yes	Y			N	mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6010	12/14/2022	T	207440-70-2	Calcium	84100	222	694	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27439-92-1	Lead	0.281	0.153	0.612	Yes	Y			B	mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27440-38-2	Arsenic	0.517	0.517	1.53	Yes	Y			U	mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27440-39-3	Barium	6.88	0.153	1.22	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27440-43-9	Cadmium	0.0306	0.0306	0.306	Yes	N			U	mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	27440-61-1	Uranium	32.7	0.0202	0.0612	Yes	Y			N	mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	27782-49-2	Selenium	26.8	0.551	1.53	Yes	Y				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 7470A	12/8/2022	T	17439-97-6	Mercury	0.00067	0.00067	0.00200	Yes	N			U	mg/L	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 7471	12/12/2022	T	17439-97-6	Mercury	0.0118	0.0118	0.0351	Yes	N			U	mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 9012	12/14/2022	N	1CNRCT	Reactive Cyanide	25000			Yes	N				mg/kg	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW-846 9045	12/12/2022	N	1PH	pH	8.41	0.0100	0.100	Yes	Y	J		H	s.u.	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	SW8461020A	12/16/2022	N	1FLASH-140	Flashpoint-140	75.0		75.0	Yes	Y	J			F	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	U-02-RC MODIFIED	12/14/2022	T	111-08-5	URANIUM-233, -234	18.7		1.00	Yes	Y				pCi/g	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	U-02-RC MODIFIED	12/14/2022	T	17440-61-1	Uranium	16.4		1.00	Yes	Y				pCi/g	Y
7002	SHP02-02.2301003-004	11/30/2022	F	SEDIMENT	U-02-RC MODIFIED	12/14/2022	T	1U-235+236	Uranium-235/236	0.948		1.00	Yes	Y				pCi/g	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	112587-46-1	Gross Alpha	5.92		4.00	Yes	Y	J			pCi/g	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	112587-47-2	Gross Beta	5.85		10.0	Yes	Y				pCi/g	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	1000014808-79-8	Sulfate	378000	20800	62500	Yes	Y	J			mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	1000016887-00-6	Chloride	32200	11200	31200	Yes	Y	J			mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	500NITRATE AS N	Nitrate as Nitrogen	10100	258	781	Yes	Y	J			mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	5014797-65-0	Nitrite	25.8	25.8	78.1	Yes	N	J		U	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17439-92-1	Lead	0.033	0.033	0.200	Yes	N			UN	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-22-4	Silver	0.0126	0.01	0.0500	Yes	Y			B	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-38-2	Arsenic	0.05	0.05	0.300	Yes	N			U	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-39-3	Barium	0.0276	0.01	0.0500	Yes	Y			BN	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-43-9	Cadmium	0.01	0.01	0.0500	Yes	N			U	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17440-47-3	Chromium	0.01	0.01	0.100	Yes	N			U	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17782-49-2	Selenium	0.995	0.06	0.300	Yes	Y				mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17439-95-4	Magnesium	27000	11.3	39.8	Yes	Y				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17439-96-5	Manganese	15.9	0.265	1.32	Yes	Y				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17440-09-7	Potassium	2790	8.5	33.2	Yes	Y				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17440-24-6	Strontium	92.7	0.133	0.664	Yes	Y			N	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	17440-66-6	Zinc	1.1	0.531	2.65	Yes	Y			B	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	107440-23-5	Sodium	156000	92.9	332	Yes	Y				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6010	12/14/2022	T	207440-70-2	Calcium	4480	212	664	Yes	Y				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27439-92-1	Lead	0.151	0.151	0.606	Yes	N			U	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27440-38-2	Arsenic	0.512	0.512	1.51	Yes	N			U	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27440-39-3	Barium	0.741	0.151	1.21	Yes	Y			B	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	27440-43-9	Cadmium	0.0303	0.0303	0.303	Yes	N			U	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	27440-61-1	Uranium	17.3	0.02	0.0606	Yes	Y			N	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	27782-49-2	Selenium	22.4	0.545	1.51	Yes	Y				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 7470A	12/8/2022	T	17439-97-6	Mercury	0.00067	0.00067	0.00200	Yes	N			U	mg/L	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 7471	12/12/2022	T	17439-97-6	Mercury	0.012	0.0122	0.0363	Yes	N			U	mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 9012	12/14/2022	N	1CNRCT	Reactive Cyanide	25000			Yes	N				mg/kg	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW-846 9045	12/12/2022	N	1PH	pH	7.48	0.0100	0.100	Yes	Y	J		H	s.u.	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	SW8461020A	12/16/2022	N	1FLASH-140	Flashpoint-140	75.0		75.0	Yes	Y	J			F	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	111-08-5	URANIUM-233, -234	4.74		1.00	Yes	Y				pCi/g	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	17440-61-1	Uranium	4.33		1.00	Yes	Y				pCi/g	Y
7003	SHP02-02.2301003-005	11/30/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1U-235+236	Uranium-235/236	0.269		1.00	Yes	N			U	pCi/g	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	112587-46-1	Gross Alpha	12.1		4.00	Yes	Y				pCi/g	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	112587-47-2	Gross Beta	16.3		10.0	Yes	Y				pCi/g	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	1000014808-79-8	Sulfate	495000	21600	64800	Yes	Y	J			mg/kg	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	50016887-00-6	Chloride	14600	583	1620	Yes	Y	J			mg/kg	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	500NITRATE AS N	Nitrate as Nitrogen	10200	267	810	Yes	Y	J			mg/kg	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	10014797-65-0	Nitrite	53.5	53.5	162	Yes	N	J		U	mg/kg	Y
7004	SHP02-02.2301003-006	11/30/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	17439-92-											

7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		1	7440-66-6	Zinc	1.06	0.852		4.26		Yes	Y				B	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		10	7440-23-5	Sodium	225000	149		532		Yes	Y					mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6010	12/14/2022	T		20	7440-70-2	Calcium	4960	341		1060		Yes	Y					mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7439-92-1	Lead	0.225	0.225		0.900		Yes	N				U	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7440-38-2	Arsenic	0.761	0.761		2.25		Yes	N				U	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7440-39-3	Barium	0.886	0.225		1.80		Yes	Y				B	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7440-43-9	Cadmium	0.045	0.045		0.450		Yes	N				U	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6020	12/8/2022	T		2	7440-61-1	Uranium	21.5	0.0297		0.0900		Yes	Y				N	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 6020	12/8/2022	T		2	7782-49-2	Selenium	28.8	0.81		2.25		Yes	Y					mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 7470A	12/8/2022	T		1	7439-97-6	Mercury	0.00067	0.00067		0.00200		Yes	N				U	mg/L	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 7471	12/12/2022	T		1	7439-97-6	Mercury	0.0169	0.0169		0.0504		Yes	N				U	mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 9012	12/14/2022	N		1	CNCRCT	Reactive Cyanide	25000					Yes	N					mg/kg	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW-846 9045	12/13/2022	N		1	PH	pH	7.91	0.0100		0.100		Yes	Y	J			H	s.u.	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		SW8461020A	12/16/2022	N		1	FLASH-140	Flashpoint-140		75.0		75.0		Yes	Y	J					Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		U-02-RC MODIFIED	12/13/2022	T		1	11-08-5	URANIUM-233,-234	5.58			1.00		Yes	Y					pCi/g	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		U-02-RC MODIFIED	12/13/2022	T		1	7440-61-1	Uranium	4.44			1.00		Yes	Y					pCi/g	Y
7005	SHP02-02.2301003-007	11/30/2022	F		SEDIMENT		U-02-RC MODIFIED	12/13/2022	T		1	U-235+236	Uranium-235/236	0.379			1.00		Yes	Y	J				pCi/g	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		EPA 900.0/EPA 9310	12/14/2022	T		1	12587-46-1	Gross Alpha	10.9			4.00		Yes	Y					pCi/g	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		EPA 900.0/EPA 9310	12/14/2022	T		1	12587-47-2	Gross Beta	8.34			10.0		Yes	Y					pCi/g	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		EPA 9056	12/6/2022	N		10000	14808-79-8	Sulfate	387000	20700		62100		Yes	Y	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		EPA 9056	12/7/2022	N		500	16887-00-6	Chloride	11200	559		1550		Yes	Y	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		EPA 9056	12/7/2022	N		500	NITRATE AS N	Nitrate as Nitrogen	7410	256		777		Yes	Y					mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		EPA 9056	12/7/2022	N		50	14797-65-0	Nitrite	25.6	25.6		77.7		Yes	N	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7439-92-1	Lead	0.033	0.033		0.200		Yes	N				UN	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7440-22-4	Silver	0.0122	0.01		0.0500		Yes	Y				B	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7440-38-2	Arsenic	0.05	0.05		0.300		Yes	N				U	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7440-39-3	Barium	0.0385	0.21		0.0500		Yes	N				BN	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7440-43-9	Cadmium	0.01	0.01		0.0500		Yes	N				U	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7440-47-3	Chromium	0.01	0.01		0.100		Yes	N				U	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7782-49-2	Selenium	0.948	0.06		0.300		Yes	Y					mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		1	7439-95-4	Magnesium	43100	12.2		43.0		Yes	Y					mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		1	7439-96-5	Manganese	40.8	0.287		1.43		Yes	Y	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		1	7440-09-7	Potassium	3160	9.17		35.8		Yes	Y	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		1	7440-24-6	Strontium	335	0.143		0.717		Yes	Y	J			N	mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		1	7440-66-6	Zinc	3.05	0.573		2.87		Yes	Y	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/13/2022	T		10	7440-23-5	Sodium	143000	100		358		Yes	Y					mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6010	12/14/2022	T		20	7440-70-2	Calcium	19500	229		717		Yes	Y	J				mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7439-92-1	Lead	0.149	0.149		0.594		Yes	N				U	mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7440-38-2	Arsenic	0.502	0.502		1.49		Yes	N					mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7440-39-3	Barium	0.18			0.0500		Yes	N					mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6020	12/7/2022	T		2	7440-43-9	Cadmium	0.0297	0.0297		0.297		Yes	N				U	mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6020	12/8/2022	T		2	7440-61-1	Uranium	28.6	0.0196		0.0594		Yes	Y				N	mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 6020	12/8/2022	T		2	7782-49-2	Selenium	21.4	0.535		1.49		Yes	Y					mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 7470A	12/8/2022	T		1	7439-97-6	Mercury	0.00067	0.00067		0.00200		Yes	N				U	mg/L	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 7471	12/12/2022	T		1	7439-97-6	Mercury	0.0121	0.0121		0.0361		Yes	N				U	mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 9012	12/14/2022	N		1	CNCRCT	Reactive Cyanide	25000					Yes	N					mg/kg	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW-846 9045	12/15/2022	N		1	PH	pH	7.26	0.0100		0.100		Yes	Y	J			H	s.u.	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		SW8461020A	12/16/2022	N		1	FLASH-140	Flashpoint-140		75.0		75.0		Yes	Y	J				F	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		U-02-RC MODIFIED	12/13/2022	T		1	11-08-5	URANIUM-233,-234	6.17			1.00		Yes	Y	J				pCi/g	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		U-02-RC MODIFIED	12/13/2022	T		1	7440-61-1	Uranium	5.18			1.00		Yes	Y					pCi/g	Y
7006	SHP02-02.2301003-008	11/29/2022	F		SEDIMENT		U-02-RC MODIFIED	12/13/2022	T		1	U-235+236	Uranium-235/236	0.46			1.00		Yes	Y					pCi/g	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		EPA 900.0/EPA 9310	12/14/2022	T		1	12587-46-1	Gross Alpha	20.8			4.00		Yes	Y					pCi/g	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		EPA 900.0/EPA 9310	12/14/2022	T		1	12587-47-2	Gross Beta	48.3			10.0		Yes	Y					pCi/g	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		EPA 9056	12/6/2022	N		10000	14808-79-8	Sulfate	450000	27100		81600		Yes	Y	J				mg/kg	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		EPA 9056	12/7/2022	N		50	14797-65-0	Nitrite	33.6	33.6		102		Yes	N	J			U	mg/kg	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		EPA 9056	12/7/2022	N		500	16887-00-6	Chloride	24300	734		2040		Yes	Y	J				mg/kg	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		EPA 9056	12/7/2022	N		500	NITRATE AS N	Nitrate as Nitrogen	16100	336		1020		Yes	Y	J				mg/kg	Y
7007	SHP02-02.2301003-009	11/29/2022	F		SEDIMENT		SW846 6010	12/14/2022	T		1	7439-92-1	Lead	0.033	0.033		0.200		Yes	N				UN	mg/L	

7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	SW-846 7470A	12/8/2022	T	1	7439-97-6	Mercury	0.00067	0.00067	0.00200	Yes	N		U	mg/L	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	SW-846 7471	12/12/2022	T	1	7439-97-6	Mercury	0.0138	0.0138	0.0413	Yes	N		U	mg/kg	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	SW-846 9012	12/14/2022	N	1	CNRCT	Reactive Cyanide	25000			Yes	N		U	mg/kg	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	SW-846 9045	12/15/2022	N	1	PH	pH	7.29	0.0100	0.100	Yes	Y	J	H	s.u.	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	SW8461020A	12/16/2022	N	1	FLASH-140	Flashpoint-140		75.0	75.0	Yes	Y	J		F	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1	11-08-5	URANIUM-233,-234	10.2		1.00	Yes	Y			pCi/g	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1	7440-61-1	Uranium	8.65		1.00	Yes	Y			pCi/g	Y
7008	SHP02-02.2301003-010	11/29/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1	U-235+236	Uranium-235/236	0.921		1.00	Yes	Y			pCi/g	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	1	12587-46-1	Gross Alpha	18.1		4.00	Yes	Y			pCi/g	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	1	12587-47-2	Gross Beta	21.3		10.0	Yes	Y			pCi/g	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	10000	14808-79-8	Sulfate	590000	29100	87600	Yes	Y	J		mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	500	16887-00-6	Chloride	21100	789	2190	Yes	Y	J		mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	500	NITRATE AS N	Nitrate as Nitrogen	14100	361	1100	Yes	Y	J		mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	100	14797-65-0	Nitrite	72.3	72.3	219	Yes	N	J	U	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7439-92-1	Lead	0.033	0.033	0.200	Yes	N		UN	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-22-4	Silver	0.0146	0.01	0.0500	Yes	Y		B	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-38-2	Arsenic	0.05	0.05	0.300	Yes	N		U	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-39-3	Barium	0.0514	0.01	0.0500	Yes	Y		N	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-43-9	Cadmium	0.01	0.01	0.0500	Yes	N		U	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-47-3	Chromium	0.01	0.01	0.100	Yes	N		U	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7782-49-2	Selenium	1.61	0.06	0.300	Yes	Y			mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7439-95-4	Magnesium	42100	17.4	61.5	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7439-96-5	Manganese	112	0.41	2.05	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7440-09-7	Potassium	5440	13.1	51.3	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7440-24-6	Strontium	537	0.205	1.03	Yes	Y		N	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7440-66-6	Zinc	7.73	0.821	4.10	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	10	7440-23-5	Sodium	20000	144	513	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6010	12/14/2022	T	20	7440-70-2	Calcium	22700	328	1030	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7439-92-1	Lead	0.185	0.185	0.741	Yes	N		U	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7440-38-2	Arsenic	0.626	0.626	1.85	Yes	N		U	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7440-39-3	Barium	3.67	0.185	1.48	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7440-43-9	Cadmium	0.037	0.037	0.370	Yes	N		U	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	2	7440-61-1	Uranium	50.6	0.0244	0.0741	Yes	Y		N	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	2	7782-49-2	Selenium	31.5	0.667	1.85	Yes	Y			mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 7470A	12/8/2022	T	1	7439-97-6	Mercury	0.00067	0.00067	0.00200	Yes	N		U	mg/L	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 7471	12/12/2022	T	1	7439-97-6	Mercury	0.0156	0.0156	0.0465	Yes	N		U	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 9012	12/14/2022	N	1	CNRCT	Reactive Cyanide	25000			Yes	N		U	mg/kg	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW-846 9045	12/15/2022	N	1	PH	pH	7.16	0.0100	0.100	Yes	Y	J	H	s.u.	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	SW8461020A	12/16/2022	N	1	FLASH-140	Flashpoint-140		75.0	75.0	Yes	Y	J		F	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1	11-08-5	URANIUM-233,-234	15.2		1.00	Yes	Y			pCi/g	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1	7440-61-1	Uranium	13.5		1.00	Yes	Y			pCi/g	Y
7009	SHP02-02.2301003-011	11/29/2022	F	SEDIMENT	U-02-RC MODIFIED	12/13/2022	T	1	U-235+236	Uranium-235/236	1.12		1.00	Yes	Y			pCi/g	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	1	12587-46-1	Gross Alpha	17.9		4.00	Yes	Y			pCi/g	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	EPA 900.0/EPA 9310	12/14/2022	T	1	12587-47-2	Gross Beta	26		10.0	Yes	Y			pCi/g	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	10000	14808-79-8	Sulfate	517000	27400	82400	Yes	Y	J		mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	10000	16887-00-6	Chloride	43400	14800	41200	Yes	Y	J		mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	EPA 9056	12/6/2022	N	10000	NITRATE AS N	Nitrate as Nitrogen	20900	6800	20600	Yes	Y	J		mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	EPA 9056	12/7/2022	N	50	14797-65-0	Nitrite	34	34.0	103	Yes	N	J	U	mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7439-92-1	Lead	0.033	0.033	0.200	Yes	N		UN	mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-22-4	Silver	0.0176	0.01	0.0500	Yes	Y		B	mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-38-2	Arsenic	0.05	0.05	0.300	Yes	N		U	mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-39-3	Barium	0.0722	0.01	0.0500	Yes	Y		N	mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-43-9	Cadmium	0.0123	0.01	0.0500	Yes	Y		B	mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7440-47-3	Chromium	0.01	0.01	0.100	Yes	N		U	mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW846 6010	12/14/2022	T	1	7782-49-2	Selenium	0.682	0.06	0.300	Yes	Y			mg/L	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7439-95-4	Magnesium	53400	17.1	60.4	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7439-96-5	Manganese	288	0.402	2.01	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7440-09-7	Potassium	6800	12.9	50.3	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7440-24-6	Strontium	586	0.201	1.01	Yes	Y		N	mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	1	7440-66-6	Zinc	21.5	0.805	4.02	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/13/2022	T	10	7440-23-5	Sodium	122000	141	503	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6010	12/14/2022	T	20	7440-70-2	Calcium	29200	322	1010	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7439-92-1	Lead	1.03	0.186	0.744	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7440-38-2	Arsenic	0.688	0.629	1.86	Yes	Y		B	mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7440-39-3	Barium	19.7	0.186	1.49	Yes	Y			mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6020	12/7/2022	T	2	7440-43-9	Cadmium	0.0633	0.0372	0.372	Yes	Y		B	mg/kg	Y
7010	SHP02-02.2301003-012	11/29/2022	F	SEDIMENT	SW-846 6020	12/8/2022	T	2	7440-61-1	U									

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**APPENDIX F:
AIR EMISSION CALCULATIONS**

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Nonradiological Air Emissions and Standards

Under the Clean Air Act of 1970 (42 USC 7401), the U.S. Environmental Protection Agency (EPA) establishes National Ambient Air Quality Standards (NAAQS) for common air pollutants known as criteria pollutants. NAAQS exist for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter less than or equal to 10 microns in diameter (PM₁₀), particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}), and lead. NAAQS represent the maximum allowable atmospheric concentrations that may occur and still protect public health and welfare and include a reasonable margin of safety to protect the more sensitive individuals in the population. Units of concentration for the NAAQS are generally expressed in parts per million or micrograms per cubic meter.

The Clean Air Act establishes air quality planning processes and requires states to develop a State Implementation Plan that details how they will maintain the NAAQS or attain a standard in a nonattainment area within mandated time frames. In New Mexico, EPA has delegated authority to the New Mexico Environment Department Air Quality Bureau to enforce air quality regulations, excluding Tribal lands. The Air Quality Bureau enforces the NAAQS and state ambient air quality standards by monitoring air quality, developing rules to regulate and to permit stationary sources of air emissions, and contributing to air quality attainment planning processes statewide. Within the Navajo Nation, the Navajo Nation Environmental Protection Agency manages air quality, although EPA is the permitting authority for stationary sources of emissions.

In addition to criteria pollutants, EPA also regulates hazardous air pollutants (HAPs) that are known or are suspected to cause serious health effects or adverse environmental effects. HAPs are emitted from a range of industrial facilities and vehicles. Examples of HAPs include hydrocarbons such as benzene, certain metals including lead and mercury, and mineral fibers such as asbestos. EPA sets Federal regulations to reduce HAP emissions from stationary sources in the National Emission Standards for Hazardous Air Pollutants (NESHAP) (EPA, 2021). A “major” source of HAPs is defined as any stationary facility or source that directly emits, or has the potential to emit, 10 tons per year or more of any HAP, or 25 tons per year or more of combined HAPs.

Ozone is formed in the atmosphere by photochemical reactions of previously emitted pollutants called precursors. Ozone precursors are mainly nitrogen oxides and photochemically reactive volatile organic compounds (VOCs). In the presence of solar radiation, the maximum effect of precursor emissions on ozone levels usually occurs several hours after they are emitted and many miles from their source. Ozone concentrations are highest during the warmer months of the year and coincide with the period of maximum insolation. Inert pollutants tend to have the highest concentrations during the colder months of the year, when light winds and nighttime or early morning surface-based temperature inversions inhibit atmospheric dispersion.

Greenhouse Gases (GHGs) and Climate Change

It is well documented that the Earth’s climate has fluctuated throughout its history. Recent scientific evidence indicates a correlation between increasing global temperatures over the past century and the worldwide proliferation of greenhouse gas (GHG) emissions by mankind. Climate change associated with this global warming is predicted to produce negative environmental, economic, and social consequences across the globe (Intergovernmental Panel on Climate Change, 2021; USGCRP, 2018).

Observed changes due to global warming include rising temperatures, shrinking glaciers and sea

ice, thawing permafrost, sea level rise, a lengthened growing season, and shifts in plant and animal ranges. In the Southwest region (e.g., Arizona, California, Colorado, Nevada, New Mexico, and Utah), observed changes include an increase in drought and wildfire conditions, a reduction in winter snowpack, and lower stream flows in major drainage basins (USGCRP, 2017). Recent assessments of climate change conclude that global warming will continue into the foreseeable future and will intensify as a function of anthropogenic greenhouse gas emissions and changes in land uses.

The most common GHGs emitted from natural processes and human activities include carbon dioxide, methane, and nitrous oxide. Each GHG is assigned a global warming potential (GWP) that equates to the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is normalized to carbon dioxide, which has a value of one. To simplify GHG analyses, total GHG emissions from a source are often expressed as a carbon dioxide equivalent, which is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. While methane and nitrous oxide have much higher GWPs than carbon dioxide, it is emitted in such greater quantities that it is the overwhelming contributor to global carbon dioxide equivalent emissions from both natural processes and human activities.

Federal agencies address emissions of GHGs by reporting and meeting reductions mandated in Federal laws, executive orders, and agency policies. On January 9, 2023, the Council on Environmental Quality released interim guidance that describes how Federal agencies should consider the effects of GHGs and climate change in their National Environmental Policy Act reviews (CEQ, 2023). The interim guidance explains that agencies should (1) consider the potential effects of project alternatives on climate change, as indicated by its estimated GHG emissions, (2) determine the social cost of project GHGs, (3) determine project consistency with GHG plans and goals, (4) consider mitigations that will reduce project GHGs, (6) consider impacts to environmental justice communities, and (7) consider adaptation measures that would make the actions and affected communities more resilient to the effects of climate change. The Council on Environmental Quality intends to revise the guidance in response to public comments or to finalize the interim guidance in the near future. Section 3.14 presents the cumulative impact analysis of project GHGs.

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Table A-1. On-Road Vehicle Activity Data for the Shiprock Project Onsite Work

Construction Activity/Vehicle Type	Trips per Day	Total Work Days	Total Trips	Miles/Round Trip		Total Miles	
				On-site	Off-site	On-site	Off-site
Evaporation Pond Early Work							
Pick-up Truck		110		80		8,800	
Water Truck - 4,000 Gallon		110		40		4,400	
Concrete Truck			75	2	62	150	4,650
Delivery Truck - Misc.	3	60	196	1.5	62	294	12,152
Delivery Truck - Fuel	1	110	110	1.5	62	165	6,820
Mechanic Truck		110		20		2,200	
Delivery Truck - Equipment			20	1.5	100	30	2,000
Honey Wagon			9	1.5	30	14	270
Trash truck			11	1.5	100	17	1,100
Worker Commuter Vehicles	20	110	2,200	1.5	100	3,300	220,000
Excavation at the Pond							
Pick-up Truck		220		80		17,600	
Delivery Truck - Fuel	2	220	440	1.5	62	660	27,280
Worker Commuter Vehicles	15	220	3,300	1.5	100	4,950	330,000
Pond Waste Processing Bldg. &							
Water Truck - 4,000 Gallon		110		20		2,200	
Delivery Truck - Fuel	1	220	220	1.5	62	330	13,640
Delivery Truck - Misc.			16	1.5	100	24	1,600
Delivery Truck - Super Sacks			116	1.5	1,000	174	116,000
Honey Wagon			10	1.5	30	15	300
Trash truck			10	1.5	100	15	1,000
Worker Commuter Vehicles	15	220	3,300	1.5	100	4,950	330,000
Remove Temporary Structures/Final Site							
Delivery Truck - Misc.	3	60	180	1.5	62	270	11,160
Pick-up Truck		120		80		9,600	
Delivery Truck - Fuel	1	120	180	1.5	62	270	11,160
Delivery Truck - Equipment			20	1.5	100	30	2,000
Water Truck - 4,000 Gallon		60		20		1,200	
Honey Wagon			10	1.5	30	15	300
Trash truck			11	1.5	100	17	1,100
Worker Commuter Vehicles	20	120	2,400	1.5	100	3,600	240,000

Notes: Data from Shiprock EA Data Call_V0_RVSD_gm comments 021323.docx. All trucks are diesel-powered.

Table A-2. Waste Haul Truck Activity Data for the Shiprock Project Alternatives

Alternative/Trip Type	Trips per Day	Total Trips	Miles/Round Trip		Total Miles	
			On-site	Off-site	On-site	Off-site
Alternative 2						
Waste Haul Truck to Waste Complex Specialists, TX	4	1,324	1.5	1,176	1,986	1,557,024
Waste Haul Truck to EnergySolutions in Clive, UT	4	1,324	1.5	916	1,986	1,212,784
Alternative 3						
Waste Haul Trucks to GELP Transload Facility.	8	1,324	1.5	181	1,986	239,697

Notes: Data from Evaporation Pond Waste Transportation Plan - Draft 081522 gm.docx. All trucks are diesel-powered.

Table A-3. Worker Truck Trips to GELP Transload Facility - Shiprock Project Alternative 3

Vehicle Type	Trips per Day	Total Work Days	Total Trips	Miles/Round Trip		Total Miles	
				On-site	Off-site	On-site	Off-site
Pick-up Truck	2	110	220	0.5	100	110	22,000

Table A-4. Emission Factors for On-road Vehicles - Shiprock EA Project Alternatives

Source Type	Fuel Type	Emission Factors (Grams/Mile) (1)							References
		VOC	CO	NOx	SO2	PM10	PM2.5	CO2e	
Passenger Car	G	0.15	1.47	0.04	0.00	0.04	0.01	330	(2)
Light Duty Truck (LDT2)	G	0.17	1.45	0.05	0.00	0.04	0.01	451	(3)
Composite Commuter Vehicle	G	0.16	1.47	0.04	0.00	0.04	0.01	360	(4)
Pick-up and Water Truck (4,000	D	0.08	1.43	0.43	0.01	0.04	0.01	864	(5)
Heavy Duty Vehicle	D	0.10	2.90	1.82	0.01	0.10	0.02	1,429	(6)

Notes: (1) Data are from the EPA MOVES3 model, as simulated by the GREET 2022 model (Argonne National Lab [ANL] 2021). Data are based on the EPA MOVES3 model, as simulated by the GREET 2022 model (Argonne National Lab [ANL] 2021). Data are based on emission factors for model year 2020 vehicles and based on the entire life of the vehicle. VOC factor includes both exhaust and evaporative emissions. PM10/PM2.5 factors include both running emissions and tire and brake wear. CO2e data from Greet 2022 model file

(2) Data from Table 2, passenger cars, except CO₂e data from the Vehicles sheet

(3) Data from Table 6, light-duty trucks 2 (LDT2), except CO₂e data from the HDV_TS sheet

(4) Equal to a fleet of 75/25% car/LDT2

(5) Data from Table 8, diesel heavy-duty pick-up trucks and vans, except CO₂e from sheet HDV_TS, cell

(6) Data from Table 19, diesel combination long-haul trucks, except CO₂e from sheet HDV_TS, cell B2104. Pertains to all heavy except pick-ups and water

Table A-5. Total On-road Vehicle Emissions for the Shiprock Project Onsite Work								
Construction Activity/Vehicle Type	Tons							CO2e (MT)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e	
Evaporation Pond Early Work								
Pick-up Truck - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	8.33	7.57
Water Truck - 4,000 Gallon - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	4.16	3.78
Concrete Truck - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.21
Concrete Truck - Offsite	0.00	0.01	0.01	0.00	0.00	0.00	7.32	6.66
Delivery Truck - Misc. - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.42
Delivery Truck - Misc. - Offsite	0.00	0.04	0.02	0.00	0.00	0.00	19.14	17.40
Delivery Truck - Fuel - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.24
Delivery Truck - Fuel - Offsite	0.00	0.02	0.01	0.00	0.00	0.00	10.74	9.77
Mechanic Truck - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	3.47	3.15
Delivery Truck - Equipment - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.04
Delivery Truck - Equipment - Offsite	0.00	0.01	0.00	0.00	0.00	0.00	3.15	2.86
Honey Wagon - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Honey Wagon - Offsite	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.39
Trash Truck - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
Trash Truck - Offsite	0.00	0.00	0.00	0.00	0.00	0.00	1.73	1.58
Worker Commuter Vehicles - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	1.31	1.19
Worker Commuter Vehicles - Offsite	0.04	0.36	0.01	0.00	0.01	0.00	87.36	79.42
Subtotal - Onsite	0.00	0.04	0.01	0.00	0.00	0.00	18.32	16.65
Subtotal - Offsite	0.04	0.44	0.06	0.00	0.01	0.00	129.88	118.07
Total	0.04	0.12	0.07	0.00	0.00	0.00	60.84	55.31
Excavation at the Pond								
Pick-up Truck - Onsite	0.00	0.03	0.01	0.00	0.00	0.00	16.65	15.14
Delivery Truck - Fuel - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	1.04	0.95
Delivery Truck - Fuel - Offsite	0.00	0.09	0.05	0.00	0.00	0.00	42.97	39.06
Worker Commuter Vehicles - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	1.97	1.79
Worker Commuter Vehicles - Offsite	0.06	0.53	0.02	0.00	0.01	0.00	131.04	119.13
Subtotal - Onsite	0.00	0.04	0.01	0.00	0.00	0.00	19.66	17.87
Subtotal - Offsite	0.06	0.62	0.07	0.00	0.02	0.00	174.01	158.19
Total	0.06	0.66	0.08	0.00	0.02	0.00	193.67	176.06
Pond Waste Processing Bldg. & Storage/Loading								
Water Truck - 4,000 Gallon - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	2.08	1.89
Delivery Truck - Fuel - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.47
Delivery Truck - Fuel - Offsite	0.00	0.04	0.03	0.00	0.00	0.00	21.49	19.53
Delivery Truck - Super Sacks - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03
Delivery Truck - Super Sacks - Offsite	0.00	0.01	0.00	0.00	0.00	0.00	2.52	2.29
Honey Wagon - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.25
Honey Wagon - Offsite	0.01	0.37	0.23	0.00	0.01	0.00	182.72	166.11
Trash Truck - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Trash Truck - Offsite	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.43
Worker Commuter Vehicles - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Worker Commuter Vehicles - Offsite	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.36
Subtotal - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	2.94	2.68
Subtotal - Offsite	0.01	0.42	0.26	0.00	0.01	0.00	207.60	188.72
Total	0.01	0.43	0.27	0.00	0.01	0.00	210.54	191.40
Remove Temporary Structures/Final Site								
Delivery Truck - Misc. - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.39
Delivery Truck - Misc. - Offsite	0.00	0.04	0.02	0.00	0.00	0.00	17.58	15.98
Pick-up Truck - Onsite	0.00	0.02	0.00	0.00	0.00	0.00	9.08	8.26
Delivery Truck - Fuel - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.43	0.39
Delivery Truck - Fuel - Offsite	0.00	0.04	0.02	0.00	0.00	0.00	17.58	15.98
Delivery Truck - Equipment - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.04
Delivery Truck - Equipment - Offsite	0.00	0.01	0.00	0.00	0.00	0.00	3.15	2.86
Water Truck - 4,000 Gallon - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	1.14	1.03
Honey Wagon - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Honey Wagon - Offsite	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.43
Trash Truck - Onsite	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
Trash Truck - Offsite	0.00	0.00	0.00	0.00	0.00	0.00	1.73	1.58
Worker Commuter Vehicles - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	1.43	1.30
Worker Commuter Vehicles - Offsite	0.04	0.39	0.01	0.00	0.01	0.00	95.30	86.64
Subtotal - Onsite	0.00	0.02	0.01	0.00	0.00	0.00	12.60	11.45
Subtotal - Offsite	0.04	0.47	0.06	0.00	0.01	0.00	135.82	123.47
Total	0.05	0.49	0.07	0.00	0.01	0.00	148.41	134.92

Table A-6. Total Emissions for Waste Haul Truck Activity Data for the Shiprock Project Alternatives								
Alternative/Vehicle Type	Tons							CO2e (MT)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e	
Alternative 2								
Waste Haul Truck to Waste Complex Specialists, TX	0.00	0.01	0.00	0.00	0.00	0.00	3.13	2.84
Waste Haul Truck to Waste Complex Specialists, TX	0.17	4.98	3.12	0.02	0.17	0.03	2,452.59	2,229.62
Waste Haul Truck to EnergySolutions in Clive, UT -	0.00	0.01	0.00	0.00	0.00	0.00	3.13	2.84
Waste Haul Truck to EnergySolutions in Clive, UT -	0.13	3.88	2.43	0.01	0.13	0.03	1,910.35	1,736.68
Alternative 3								
Waste Haul Trucks to GELP Transload Facility -	0.00	0.01	0.00	0.00	0.00	0.00	3.13	2.84
Waste Haul Trucks to GELP Transload Facility -	0.03	0.77	0.48	0.00	0.03	0.01	377.56	343.24

Table A-7. Total Emissions for Worker Truck Trips to GELP Transload Facility - Shiprock Project Alternative 3								
Vehicle Type	Tons							CO2e (MT)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2e	
Pick-up Truck - Offsite	0.00	0.04	0.00	0.00	0.00	0.00	10.99	9.99

Table A-8. Nonroad Equipment Activity Data for the Shiprock Project Onsite Work								
Construction Activity/Equipment Type	Hp Rating	Fuel Type	Ave. Daily Load	Number Active	Hours/Day	Daily Hp-Hrs	Work Days	Total Hp-Hrs
Evaporation Pond Early Work								
Scraper - 627K	555	D	0.60	2	9	5,994	44	263,736
Dozer - D9	468	D	0.40	1	9	1,685	66	111,197
Grader - Cat 140	179	D	0.30	1	9	483	66	31,898
Light Tower	13	D	0.20	4	9	94	110	10,296
Soil Compactor - Cat 825 Sheeps Foot	174	D	0.60	1	9	940	66	62,014
Excavator - Cat 320	172	D	0.50	2	9	1,548	110	170,280
Soil Compactor - Cat CS56 Smooth Drum Vibratory	157	D	0.30	1	9	424	66	27,977
Skid Steer - Bobcat	110	D	0.60	4	9	2,376	110	261,360
Gator - John Deere XUV835M	54	G	0.30	2	9	292	110	32,076
Telehandler	125	D	0.40	2	9	900	66	59,400
Crane - Rough Terrain Terex RT 1045	178	D	0.25	1	9	401	44	17,622
Water Tanker - Cat 725C2	320	D	0.40	1	9	1,152	66	76,032
Dump Truck - Western Star Tri	505	D	0.30	3	9	4,091	40	163,620
Compressor - Doosan 825 CFM	266	D	0.90	4	9	8,618	22	189,605
Volumetric Mixer - Strong Indus VM-14	400	D	0.90	4	9	12,960	22	285,120
Excavation at the Pond								
Excavator - Cat 320	172	D	0.50	4	9	3,096	220	681,120
Skid Steer - Bobcat	110	D	0.60	4	9	2,376	220	522,720
Telehandler	125	D	0.30	2	9	675	220	148,500
Pumps - 2" Trash	10	G	0.50	2	9	90	220	19,800
Dozer - D6	215	D	0.30	1	9	581	220	127,710
Light Tower	13	D	0.20	4	9	94	220	20,592
Gator - John Deere XUV835M	54	G	0.30	2	9	292	220	64,152
Haul Truck - Cat 725 Articulated	338	D	0.60	3	9	5,476	220	1,204,632
Pond Waste Processing Bldg. & Storage/Loading Area								
Skid Steer - Bobcat	110	D	0.60	4	9	2,376	220	522,720
Telehandler	125	D	0.50	1	9	563	220	123,750
Forklift - 22,000 lb	125	D	0.50	1	9	563	220	123,750
Loader - Cat 910 Compact	110	D	0.60	3	9	1,782	110	196,020
Forklift - Taylor XB-250M 25,000 lb	173	D	0.80	2	9	2,491	220	548,064
Remove Temporary Structures/Final Site Recontouring								
Crane - Rough Terrain Terex RT 1045	175	D	0.50	1	9	788	15	11,813
Telehandler	125	D	0.50	1	9	563	60	33,750
Gator - John Deere XUV835M	54	G	0.30	2	9	292	120	34,992
Loader - Cat 950GC	225	D	0.60	1	9	1,215	100	121,500
Dump Truck - Western Star 4900 Tri	505	D	0.30	3	9	4,091	30	122,715
Grader - Cat 140	179	D	0.30	1	9	483	90	43,497
Excavator - Cat 320	172	D	0.50	2	9	1,548	30	46,440
Skid Steer - Cat	110	D	0.60	2	9	1,188	30	35,640
Dozer - D6	215	D	0.30	1	9	581	30	17,415
Scraper - Cat 627K	555	D	0.60	2	9	5,994	60	359,640
Dozer - D9	468	D	0.60	1	9	2,527	60	151,632
Soil Compactor - Cat 825 Sheeps Foot	174	D	0.60	1	9	940	60	56,376
Truck - Hydroseeder	250	D	0.38	1	9	855	5	4,275

Notes: Data from Shiprock EA Data Call_V0_RVSD_gm comments

Table A-9. Nonroad Equipment Activity Data for the Shiprock Project Alternative 3 - GELP Transload Facility Onsite Work								
Construction Activity/Equipment Type	Hp Rating	Fuel Type	Avg. Daily Load	Number Active	Hours/Day	Daily Hp-Hrs	Work Days	Total Hp-Hrs
Crane - Rough Terrain Terex RT 1045	178	D	0.25	1	9	401	110	44,055
Light Tower	13	D	0.20	2	9	47	110	5,148
Telehandler	125	D	0.50	1	9	563	110	61,875
Skid Steer - Cat	110	D	0.60	1	9	594	110	65,340

Table A-10. Emission Factors for Nonroad Equipment - Shiprock Project Alternatives								
Construction Activity/Equipment Type	Fuel Type	Emission Factors (Grams/Horsepower-Hour)						
		VOC	CO	NOx	SO2	PM10	PM2.5	CO2
Evaporation Pond Early Work								
Scraper - 627K	D	0.06	0.21	0.52	0.00	0.03	0.03	507
Dozer - D9	D	0.06	0.19	0.46	0.00	0.03	0.03	507
Grader - Cat 140	D	0.09	0.31	1.15	0.00	0.04	0.04	495
Light Tower	D	0.05	0.10	1.05	0.00	0.02	0.01	566
Soil Compactor - Cat 825 Sheeps Foot	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Excavator - Cat 320	D	0.06	0.14	0.36	0.00	0.02	0.02	508
Soil Compactor - Cat CS56 Smooth Drum Vibratory	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Skid Steer - Bobcat	D	0.09	0.40	1.23	0.00	0.05	0.04	493
Gator - John Deere XUV835M	G	0.21	3.38	0.39	0.00	0.02	0.02	1,068
Telehandler	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Crane - Rough Terrain Terex RT 1045	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Water Tanker - Cat 725C2	D	0.06	0.07	0.19	0.00	0.01	0.01	509
Dump Truck - Western Star Tri	D	0.06	0.07	0.19	0.00	0.01	0.01	509
Compressor - Doosan 825 CFM	D	0.07	0.11	0.49	0.00	0.02	0.02	505
Volumetric Mixer - Strong Indus VM-14	D	0.10	0.50	1.10	0.00	0.08	0.08	488
Excavation at the Pond								
Excavator - Cat 320	D	0.06	0.14	0.36	0.00	0.02	0.02	508
Skid Steer - Bobcat	D	0.09	0.40	1.23	0.00	0.05	0.04	493
Telehandler	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Pumps - 2" Trash	G	0.21	3.38	0.39	0.00	0.02	0.02	1,068
Dozer - D6	D	0.06	0.08	0.25	0.00	0.01	0.01	508
Light Tower	D	0.05	0.10	1.05	0.00	0.02	0.01	566
Gator - John Deere XUV835M	G	0.21	3.38	0.39	0.00	0.02	0.02	1,068
Haul Truck - Cat 725 Articulated	D	0.06	0.07	0.19	0.00	0.01	0.01	509
Pond Waste Processing Bldg. & Storage/Loading								
Skid Steer - Bobcat	D	0.09	0.40	1.23	0.00	0.05	0.04	493
Telehandler	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Forklift - 22,000 lb	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Loader - Cat 910 Compact	D	0.09	0.34	1.23	0.00	0.04	0.04	493
Forklift - Taylor XB-250M 25,000 lb	D	0.10	0.33	0.90	0.00	0.06	0.06	491
Remove Temporary Structures/Final Site								
Crane - Rough Terrain Terex RT 1045	D	0.10	0.33	0.90	0.00	0.06	0.06	1.25
Telehandler	D	0.10	0.33	0.90	0.00	0.06	0.06	1.25
Gator - John Deere XUV835M	G	0.21	3.38	0.39	0.00	0.02	0.02	2.72
Loader - Cat 950GC	D	0.09	0.34	1.23	0.00	0.04	0.04	1.25
Dump Truck - Western Star 4900 Tri	D	0.06	0.07	0.19	0.00	0.01	0.01	1.30
Grader - Cat 140	D	0.09	0.31	1.15	0.00	0.04	0.04	1.26
Excavator - Cat 320	D	0.06	0.14	0.36	0.00	0.02	0.02	1.29
Skid Steer - Cat	D	0.09	0.40	1.23	0.00	0.05	0.04	1.25
Dozer - D6	D	0.06	0.08	0.25	0.00	0.01	0.01	1.29
Scraper - Cat 627K	D	0.06	0.21	0.52	0.00	0.03	0.03	1.29
Dozer - D9	D	0.06	0.19	0.46	0.00	0.03	0.03	1.29
Soil Compactor - Cat 825 Sheeps Foot	D	0.10	0.33	0.90	0.00	0.06	0.06	1.25
Truck - Hydroseeder	D	0.07	0.17	0.90	0.00	0.02	0.02	1.28

Notes: (1) Data are from the EPA MOVES3 model, as simulated by the GREET 2022 model (Argonne National Lab [ANL] 2023). Data equate to national average emission factors for model year 2020 and based on the entire life of the equipment.

Table A-11. Total Emissions for Off-Road Equipment - Shiprock Project Onsite Work								
Construction Activity/Equipment Type	Tons							CO2e (MT)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
Evaporation Pond Early Work								
Scraper - 627K	0.02	0.06	0.15	0.00	0.01	0.01	147.41	134.01
Dozer - D9	0.01	0.02	0.06	0.00	0.00	0.00	62.15	56.50
Grader - Cat 140	0.00	0.01	0.04	0.00	0.00	0.00	17.41	15.83
Light Tower	0.00	0.00	0.01	0.00	0.00	0.00	6.42	5.84
Soil Compactor - Cat 825 Sheeps Foot	0.01	0.02	0.06	0.00	0.00	0.00	33.53	30.48
Excavator - Cat 320	0.01	0.03	0.07	0.00	0.00	0.00	95.40	86.72
Soil Compactor - Cat CS56 Smooth Drum Vibratory	0.00	0.01	0.03	0.00	0.00	0.00	15.13	13.75
Skid Steer - Bobcat	0.03	0.11	0.36	0.00	0.01	0.01	142.00	129.09
Gator - John Deere XUV835M	0.01	0.12	0.01	0.00	0.00	0.00	37.78	34.34
Telehandler	0.01	0.02	0.06	0.00	0.00	0.00	32.12	29.20
Crane - Rough Terrain Terex RT 1045	0.00	0.01	0.02	0.00	0.00	0.00	9.53	8.66
Water Tanker - Cat 725C2	0.00	0.01	0.02	0.00	0.00	0.00	42.69	38.81
Dump Truck - Western Star Tri	0.01	0.01	0.03	0.00	0.00	0.00	91.88	83.52
Compressor - Doosan 825 CFM	0.01	0.02	0.10	0.00	0.00	0.00	105.48	95.89
Volumetric Mixer - Strong Indus VM-14	0.03	0.16	0.35	0.00	0.02	0.02	153.43	139.48
Subtotal	0.15	0.61	1.36	0.00	0.07	0.07	992.35	902.14
Excavation at the Pond								
Excavator - Cat 320	0.04	0.10	0.27	0.00	0.01	0.01	381.58	346.89
Skid Steer - Bobcat	0.05	0.23	0.71	0.00	0.03	0.03	284.00	258.18
Telehandler	0.02	0.05	0.15	0.00	0.01	0.01	80.30	73.00
Pumps - 2" Trash	0.00	0.07	0.01	0.00	0.00	0.00	23.32	21.20
Dozer - D6	0.01	0.01	0.03	0.00	0.00	0.00	71.55	65.04
Light Tower	0.00	0.00	0.02	0.00	0.00	0.00	12.84	11.68
Gator - John Deere XUV835M	0.01	0.24	0.03	0.00	0.00	0.00	75.55	68.68
Haul Truck - Cat 725 Articulated	0.07	0.09	0.25	0.00	0.01	0.01	676.43	614.94
Subtotal	0.22	0.81	1.48	0.00	0.07	0.06	1,605.57	1,459.61
Pond Waste Processing Bldg. & Storage/Loading								
Skid Steer - Bobcat	0.05	0.23	0.71	0.00	0.03	0.03	284.00	258.18
Telehandler	0.01	0.04	0.12	0.00	0.01	0.01	66.91	60.83
Forklift - 22,000 lb	0.01	0.04	0.12	0.00	0.01	0.01	66.91	60.83
Loader - Cat 910 Compact	0.02	0.07	0.27	0.00	0.01	0.01	106.50	96.82
Forklift - Taylor XB-250M 25,000 lb	0.06	0.20	0.54	0.00	0.04	0.04	296.34	269.40
Subtotal	0.16	0.59	1.77	0.00	0.09	0.09	820.67	746.06
Remove Temporary Structures/Final Site								
Crane - Rough Terrain Terex RT 1045	0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.01
Telehandler	0.00	0.01	0.03	0.00	0.00	0.00	0.05	0.04
Gator - John Deere XUV835M	0.01	0.13	0.01	0.00	0.00	0.00	0.10	0.10
Loader - Cat 950GC	0.01	0.05	0.17	0.00	0.01	0.01	0.17	0.15
Dump Truck - Western Star 4900 Tri	0.01	0.01	0.03	0.00	0.00	0.00	0.18	0.16
Grader - Cat 140	0.00	0.01	0.06	0.00	0.00	0.00	0.06	0.05
Excavator - Cat 320	0.00	0.01	0.02	0.00	0.00	0.00	0.07	0.06
Skid Steer - Cat	0.00	0.02	0.05	0.00	0.00	0.00	0.05	0.04
Dozer - D6	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Scraper - Cat 627K	0.02	0.08	0.20	0.00	0.01	0.01	0.51	0.47
Dozer - D9	0.01	0.03	0.08	0.00	0.00	0.00	0.22	0.20
Soil Compactor - Cat 825 Sheeps Foot	0.01	0.02	0.06	0.00	0.00	0.00	0.08	0.07
Truck - Hydroseeder	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Subtotal	0.09	0.38	0.72	0.00	0.04	0.04	1.52	1.38
Table A-12. Total Emissions for Off-Road Equipment - Shiprock Project Alternative 3 - GELP Transload Facility Onsite Work								
Activity/Equipment Type	Tons							CO2e (MT)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
Crane - Rough Terrain Terex RT 1045	0.00	0.02	0.04	0.00	0.00	0.00	23.82	21.66
Light Tower	0.00	0.00	0.01	0.00	0.00	0.00	3.21	2.92
Telehandler	0.01	0.02	0.06	0.00	0.00	0.00	33.46	30.41
Skid Steer - Cat	0.01	0.03	0.09	0.00	0.00	0.00	35.50	32.27
Subtotal	0.02	0.07	0.20	0.00	0.01	0.01	95.99	88.65

Table A-13. Fugitive Dust Activity Data for the Shiprock Project Onsite Work						
Construction Activity/Source Type	Throughput (Tons)	On-site Paved Road Round Trip Distance (Mi)	Total Truck Trips	Disburbed Acres	Work Days	Total Activity (1)
Stormwater Retention Basin Reconfiguration						
Actively Disturbed Ground				7	66	462
Paved Road Dust - Fuel Trucks		1.5	66			99
Waste Processing Area Installation						
Actively Disturbed Ground				4	44	176
Paved Road Dust - Misc. Delivery, Concrete, and Fuel Trucks		1.5	315			473
Inactive Disturbed Area				4		
Excavation of the Pond						
Actively Disturbed Ground				1	220	220
Truck Loading - Soil	39,700					
Unpaved Road Dust - Soil Haul Truck		0.5	1,500			750
Paved Road Dust - Fuel Trucks		2	440			880
Pond Waste Processing Bldg. & Storage/Loading Area						
Paved Road Dust - Fuel Trucks		1.5	220			330
Remove Temporary Structures						
Actively Disturbed Ground				2.5	120	300
Paved Road Dust - Misc. Delivery and Fuel Trucks		1.5	300			450
Inactive Disturbed Area				9		
Final Site Recontouring						
Actively Disturbed Ground				6.5	60	390
Paved Road Dust - Fuel Trucks		2	60			120
Inactive Disturbed Area				11		
Note: (1) = total acre-days for disturbed ground and total miles for unpaved road dust.						
(3) Throughput in tons.						

Table A-14. Fugitive Dust Activity Data for the Shiprock Project Alternative 3 - GELP Transload Facility Onsite Work						
Construction Activity/Source Type	Throughput (Tons)	On-site Paved Road Round Trip Distance (Mi)	Total Truck Trips	Disburbed Acres	Work Days	Total Activity (1)
Actively Disturbed Ground				1	110	110

Table A-15. Fugitive Dust Emission Factors for the Shiprock Project Alternatives							
Source Type	Emission Factors						References
					PM10	PM2.5	
Actively Disturbed Ground					9.93	0.99	(1)
Paved Road Dust - On-site Non-Waste Trucks					0.18	0.05	(3)
Paved Road Dust - On-site Waste Trucks					0.23	0.06	(3)
Truck Loading - Soil					0.0005	0.00008	(4)
Unpaved Road Dust - Haul Trucks					4.19	0.42	(5)
Inactive Disturbed Ground Wind Erosion					10.28	0.77	(6)

Notes: (1) From Table 3-2 for active large-scale earth moving operations (Countess Environmental 2006). Emissions reduced by 74% from uncontrolled levels to simulate water application every 2.1 hours and use of best management practices for fugitive dust control (Table 3-7 Countess Environmental 2006). Converted to units of lbs/acre-day of disturbance assuming 22 work days/month.

(3) From Section 13.2.1 of AP-42 (USEPA 2011). Units in Lb/VMT. Emissions reduced by 50% from uncontrolled levels due to the use of a PM10-efficient street sweeping vacuum unit 2 times per day.

(4) Estimated with the methods identified in AP-42 Section 13.2.4 (USEPA 2006b). Units in lbs/ton of soil loaded.

(5) Developed for methods in AP-42 Section 13.2.5. See Table Pile Efs for details. Emissions reduced by 0% to simulate use of soil stabilization measures. Units in grams/meter² of pile area.

(6) From Section 13.2.2 of AP-42 (USEPA 2006). Units in Lb/VMT.

Table A-16. Emission Factor Estimates for Windblown Dust from Inactive Disturbed Areas - Shiprock Project Alternatives

Year	Activity (1)	Annual Disturbed Area	U ₁₀ (m/s) (2)	Threshold Friction	ction Veloc * (m/s) (4)	Uncontrolled Gm/m ² (5)
1	All Soils		24.1	1.02	1.278	10.28
2	All Soils		24.1	1.02	1.278	10.28
3	All Soils		24.1	1.02	1.278	10.28
Total - Soil Remediation						

Notes: (1) Assumes area is inactive for one year after prior year of active disturbance.

(2) Wind speeds at 10 meter level (U₁₀). Equates to equation #5 presented in AP-42 Section 13.2.5 (EPA 2006).

(3) Threshold friction velocity value for scoria from AP-42 Section Table 13.2.5-2.

(4) Equates to equation #4 presented in AP-42 Section 13.2.5.

(5) Equates to equation #3 presented in AP-42 Section 13.2.5.

Table A-17. Total Fugitive Dust Emissions for Shiprock Project Onsite Work

Construction Activity/Source Type	Tons						
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2
Stormwater Retention Basin Reconfiguration							
Actively Disturbed Ground					2.29	0.23	
Paved Road Dust - Fuel Trucks					0.01	0.00	
Subtotal					2.30	0.23	
Waste Processing Area Installation							
Actively Disturbed Ground					0.87	0.09	
Paved Road Dust - Misc. Delivery, Concrete, and Fuel Trucks					0.04	0.01	
Inactive Disturbed Area					0.18	0.01	
Subtotal					1.10	0.11	
Excavation of the Pond							
Actively Disturbed Ground					1.09	0.11	
Truck Loading - Soil					0.01	0.00	
Unpaved Road Dust - Soil Haul Truck					1.57	0.16	
Paved Road Dust - Fuel Trucks					0.08	0.02	
Subtotal					2.75	0.29	
Pond Waste Processing Bldg. & Storage/Loading Area							
Paved Road Dust - Fuel Trucks					0.03	0.01	
Subtotal					0.03	0.01	
Remove Temporary Structures							
Actively Disturbed Ground					1.49	0.15	
Paved Road Dust - Misc. Delivery and Fuel Trucks					0.04	0.01	
Inactive Disturbed Area					0.41	0.03	
Subtotal					1.94	0.19	
Final Site Recontouring							
Actively Disturbed Ground					1.94	0.19	
Paved Road Dust - Fuel Trucks					0.01	0.00	
Inactive Disturbed Area					0.51	0.04	
Subtotal					2.45	0.23	

Table A-18. Total Fugitive Dust Emissions for the Shiprock Project Alternative 3 - GELP Transload Facility Onsite Work							
Construction Activity-Soil Type/Equipment Type	Tons						
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2
Actively Disturbed Ground					0.55	0.05	
Subtotal					0.55	0.05	

Table A-19. Locomotive Activity Data for the Shiprock Project - Onsite GELP							
Equipment Type	Hp	Load Factor	Number Active	Hourly Hp-Hr	Hours/ Round Trip	Annual Round Trips	Total Hp-Hrs
Switch Yard Locomotive	2,028	0.10	1	203	2.0	9	3,650
Line Haul Locomotive	4,000	0.10	2	800	1.0	9	7,200
Notes: Estimates							

Table A-20. Line Haul Locomotive Usages between GELP Transload Facility and Disposal Site Destinations - Shiprock Project Alternative 3								
Disposal Site	Hp	Load Factor	Number Active	Hourly Hp-Hr	Round Trip Miles	Hours/Round Trip (1)	Annual Round Trips	Total Hp-Hrs
EnergySolutions - Clive, UT	4,000	0.47	2	3,760	2,500	55.6	9	1,880,000
Waste Complex Specialists, TX	4,000	0.47	2	3,760	2,892	64.3	9	2,174,784
Notes: (1) Assumes 45 mph average speed.								

Table A-21. Emission Factors for Locomotives - Shiprock Project Alternative 3								
Project Scenario/Equipment	Emission Factors (Gm/Hp-Hr)							
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	References
Year 2025								
Switch Yard Locomotive	0.55	1.83	9.87	0.01	0.21	0.20	672	(1)
Line Haul Locomotive	0.13	1.28	3.56	0.01	0.08	0.07	491	(1)
Notes: (1) Data from "Emission Factors for Locomotives" (EPA Office of Transportation and Air Quality, 2009) and equate to national locomotive fleet average emission factors for year 2025.								

Table A-22. Total Locomotive Emissions - Shiprock Project Alternative 3								
Scenario/Source Activity	Total Tons							CO2e (MT)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
GELP Transload Facility								
Switch Yard Locomotive	0.00	0.01	0.04	0.00	0.00	0.00	2.70	2.46
Line Haul Locomotive	0.00	0.01	0.03	0.00	0.00	0.00	3.90	3.54
Line Haul to Disposal Sites								
EnergySolutions - Clive, UT	0.27	2.65	7.37	0.01	0.16	0.15	1,018	925
Waste Complex Specialists, TX	0.31	3.07	8.53	0.01	0.18	0.18	1,178	1,070
Total - EnergySolutions Option	0.28	2.67	7.44	0.01	0.16	0.16	1,025	931
Total - Waste Complex Specialists Option	0.32	3.09	8.60	0.01	0.19	0.18	1,184	1,076

Table A-23. Emissions Summary for Activities from Shiprock Project Alternative 2

Construction Activity/Source	Tons							CO2 (mt)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
Evaporation Pond at the Shiprock, New Mexico, Disposal Site - Year 1								
On-Road Vehicles - Onsite	0.00	0.04	0.01	0.00	0.00	0.00	18	17
On-Road Vehicles - Offsite	0.04	0.44	0.06	0.00	0.01	0.00	130	118
Nonroad Equipment	0.15	0.61	1.36	0.00	0.07	0.07	992	902
Fugitive Dust					3.40	0.34		
Excavation at the Pond - Year 2								
On-Road Vehicles - Onsite	0.00	0.04	0.01	0.00	0.00	0.00	20	18
On-Road Vehicles - Offsite	0.06	0.62	0.07	0.00	0.02	0.00	174	158
Nonroad Equipment	0.22	0.81	1.48	0.00	0.07	0.06	1,606	1,460
Fugitive Dust					2.75	0.29		
Pond Waste Processing Bldg. & Storage/Loading Area - Year 2								
On-Road Vehicles - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	3	3
On-Road Vehicles - Offsite	0.01	0.42	0.26	0.00	0.01	0.00	208	189
Nonroad Equipment	0.16	0.59	1.77	0.00	0.09	0.09	821	746
Fugitive Dust					0.03	0.01		
Waste Haul Truck - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	3.13	2.84
Waste Haul Truck to Waste Complex Specialists, TX - Offsite	0.17	4.98	3.12	0.02	0.17	0.03	2,453	2,230
Waste Haul Truck to EnergySolutions in Clive, UT - Offsite	0.13	3.88	2.43	0.01	0.13	0.03	1,910	1,737
Remove Temporary Structures/Final Site Recontouring - Year 3								
On-Road Vehicles - Onsite	0.00	0.02	0.01	0.00	0.00	0.00	13	11
On-Road Vehicles - Offsite	0.04	0.47	0.06	0.00	0.01	0.00	136	123
Nonroad Equipment	0.09	0.38	0.72	0.00	0.04	0.04	2	1
Fugitive Dust					4.40	0.42		

Table A-24. Annual Emissions for Activities from Shiprock Project Alternative 2

Construction Component/Activity	Tons per Year							CO2 (mt)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
Year 1								
Onsite	0.15	0.65	1.37	0.00	3.48	0.42	1,011	919
Offsite - Vehicles	0.04	0.44	0.06	0.00	0.01	0.00	130	118
Total Year 1	0.19	1.09	1.44	0.00	3.49	0.42	1,141	1,037
Year 2								
Onsite	0.38	1.44	3.26	0.01	2.94	0.45	2,452	2,229
Offsite - Waste Complex Specialists Option	0.25	6.02	3.46	0.02	0.20	0.04	2,834	2,577
Offsite - EnergySolutions Option	0.21	4.92	2.77	0.02	0.17	0.03	2,292	2,084
Total Year 2 - Waste Complex Specialists Option	0.62	7.46	6.72	0.02	3.15	0.49	5,286	4,806
Total Year 2 - EnergySolutions Option	0.58	6.36	6.03	0.02	3.11	0.48	4,744	4,313
Year 3								
Onsite	0.09	0.40	0.73	0.00	4.43	0.46	14	13
Offsite - Vehicles	0.04	0.47	0.06	0.00	0.01	0.00	136	123
Total Year 3	0.13	0.87	0.79	0.00	4.45	0.46	150	136
Total Emissions - Waste Complex Specialists Option	0.95	9.43	8.95	0.03	11.09	1.37	6,577	5,979
Total Emissions - EnergySolutions Option	0.91	8.33	8.26	0.03	11.05	1.37	6,034	5,486

Notes: All onsite emissions would occur within the Shiprock site and include on-road vehicles, waste haul trucks, nonroad equipment, and fugitive dust.

Table A-25. Emissions Summary for Activities from Shiprock Project Alternative 3								
Construction Activity	Tons							CO2 (mt)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
Evaporation Pond at the Shiprock, New Mexico, Disposal Site - Year 1								
On-Road Vehicles - Onsite	0.00	0.04	0.01	0.00	0.00	0.00	18	17
On-Road Vehicles - Offsite	0.04	0.44	0.06	0.00	0.01	0.00	130	118
Nonroad Equipment	0.15	0.61	1.36	0.00	0.07	0.07	992	902
Fugitive Dust					3.40	0.34		
Excavation at the Pond - Year 2								
On-Road Vehicles - Onsite	0.00	0.04	0.01	0.00	0.00	0.00	20	18
On-Road Vehicles - Offsite	0.06	0.62	0.07	0.00	0.02	0.00	174	158
Nonroad Equipment	0.22	0.81	1.48	0.00	0.07	0.06	1,606	1,460
Fugitive Dust					2.75	0.29		
Pond Waste Processing Bldg. & Storage/Loading Area - Year 2								
On-Road Vehicles - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	3	3
On-Road Vehicles - Offsite	0.01	0.42	0.26	0.00	0.01	0.00	208	189
Waste Haul Truck - Onsite	0.00	0.01	0.00	0.00	0.00	0.00	3	3
Waste Haul Trucks to GELP - Offsite	0.03	0.77	0.48	0.00	0.03	0.01	381	346
Worker Truck Trips to GELP - Offsite	0.00	0.04	0.00	0.00	0.00	0.00	11	10
Train Transport of Waste - GELP to Waste Complex Specialists Option	0.32	3.09	8.60	0.01	0.19	0.18	1,184	1,076
Train Transport of Waste - GELP to EnergySolutions Option	0.28	2.67	7.44	0.01	0.16	0.16	1,025	931
Nonroad Equipment	0.16	0.59	1.77	0.00	0.09	0.09	821	746
Fugitive Dust					0.03	0.01		
Load Trains at GELP Transload Facility - Year 2								
Nonroad Equipment	0.02	0.07	0.20	0.00	0.01	0.01	96	89
Fugitive Dust					0.55	0.05		
Remove Temporary Structures/Final Site Recontouring - Year 3								
On-Road Vehicles - Onsite	0.00	0.02	0.01	0.00	0.00	0.00	13	11
On-Road Vehicles - Offsite	0.04	0.47	0.06	0.00	0.01	0.00	136	123
Nonroad Equipment	0.09	0.38	0.72	0.00	0.04	0.04	2	1
Fugitive Dust					4.40	0.42		

Table A-26. Annual Emissions for Activities from Shiprock Project Alternative 3								
Construction Component/Activity	Tons per Year							CO2 (mt)
	VOC	CO	NOx	SOx	PM10	PM2.5	CO2	
Year 1								
Onsite	0.15	0.65	1.37	0.00	3.48	0.42	1,011	919
Offsite - Vehicles	0.04	0.44	0.06	0.00	0.01	0.00	130	118
Total Year 1	0.19	1.09	1.44	0.00	3.49	0.42	1,141	1,037
Year 2								
Onsite	0.38	1.44	3.26	0.01	2.94	0.45	2,452	2,229
Offsite - GELP Transload Facility Activities	0.02	0.07	0.20	0.00	0.56	0.07	96	89
Offsite - Waste Complex Specialists Option	0.42	4.94	9.42	0.02	0.25	0.19	1,957	1,779
Offsite - EnergySolutions Option	0.38	4.52	8.26	0.02	0.22	0.17	1,798	1,634
Total Year 2 - Waste Complex Specialists Option	0.82	6.45	12.88	0.02	3.75	0.71	4,505	4,097
Total Year 2 - EnergySolutions Option	0.77	6.03	11.72	0.02	3.72	0.68	4,346	3,952
Year 3								
Onsite	0.09	0.40	0.73	0.00	4.43	0.46	14	13
Offsite - Vehicles	0.04	0.47	0.06	0.00	0.01	0.00	136	123
Total Year 3	0.13	0.87	0.79	0.00	4.45	0.46	150	136
Total Emissions - Waste Complex Specialists Option	1.14	8.41	15.11	0.03	11.69	1.59	5,796	5,270
Total Emissions - EnergySolutions Option	1.10	7.99	13.95	0.03	11.66	1.57	5,636	5,125

Notes: All onsite emissions would occur within the Shiprock site and include on-road vehicles, waste haul trucks, nonroad equipment, and fugitive dust.

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**APPENDIX G:
BIOLOGICAL AND NATURAL RESOURCES**

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Table G-1. Special-status species potentially present on or near the Shiprock disposal site project area

Name (Scientific Name)	Listing Status	Notes
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Navajo Nation endangered BGEPA	Foraging habitat along the San Juan River, but no nesting habitat
Burrowing owl (<i>Athene cunicularia</i>)	Navajo Nation endangered BCC	Habitat on the terrace in association with prairie dog burrows; not observed in the area since 2020
Colorado pikeminnow (<i>Ptychocheilus lucius</i>)	ESA and Navajo Nation endangered	Designated critical habitat in the San Juan River
Golden eagle (<i>Aquila chrysaetos</i>)	Navajo Nation endangered BGEPA	Foraging habitat on or near the project area, but no nesting habitat; historically observed on/near site
Mesa Verde cactus (<i>Sclerocactus mesae-verdae</i>)	ESA and Navajo Nation endangered	Known populations in terrace areas; might also occur within terrace areas identified as potential habitat and outside the project area
Monarch butterfly (<i>Danaus plexippus</i>)	ESA candidate species	Monarchs depend on milkweed to complete life cycle; horsetail milkweed (<i>Asclepias subverticillata</i>) has been observed on the floodplain
Mountain plover (<i>Charadrius montanus</i>)	Navajo Nation endangered BCC	Marginal habitat identified in terrace areas; not historically or recently observed in the area
Peregrine falcon (<i>Falco peregrinus</i>)	Navajo Nation sensitive	Could forage on or near the project area; no nesting habitat; not historically observed in the area
Razorback sucker (<i>Xyrauchen texanus</i>)	ESA and Navajo Nation endangered	Designated critical habitat in the San Juan River
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	ESA and Navajo Nation endangered	Marginal foraging habitat in floodplain, but no nesting habitat; not historically observed in the area
Yellow warbler (<i>Dendroica petechia</i>)	Navajo Nation endangered	Marginal habitat in the floodplain, but no nesting habitat; not historically observed in the area

Key: BCC = Bird of Conservation Concern; BGEPA = Bald and Golden Eagle Protection Act; ESA = Endangered Species Act

Table G-2. Plants without special status commonly observed on or near the Shiprock disposal site project area

Species Name (Scientific Name)	Category	Notes
Annual wheatgrass (<i>Eremopyrum triticeum</i>)	Invasive grass	Floodplain, terrace, and washes
Broadleaf pepperweed (<i>Lepidium latifolium</i>)	Invasive perennial	Floodplain
Broom snakeweed (<i>Gutierrezia sarothrae</i>)	Native subshrub	Predominantly in terrace areas, undisturbed and disturbed
Bulrush (<i>Schoenoplectus</i> spp.)	Grass-like	Several species identified in wetlands
Burningbush (<i>Bassia scoparia</i>)	Invasive annual	Floodplain, terrace, and wash areas, primarily in disturbed places
Cattail (<i>Typha</i> spp.)	Grass-like	<i>T. latifolia</i> (introduced) and <i>T. domingensis</i> (native) identified in wetlands

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Species Name (Scientific Name)	Category	Notes
Cheatgrass (<i>Bromus tectorum</i>)	Invasive grass	Floodplain, terrace, wash
Common reed (<i>Phragmites australis</i>)	Introduced grass	Wetlands within the floodplain
Common stork's bill (<i>Erodium cicutarium</i>)	Introduced annual	Floodplain, terrace
Desert prince's plume (<i>Stanleya pinnata</i>)	Native perennial	Terrace
Fourwing saltbush (<i>Atriplex canescens</i>)	Native shrub	Floodplain, terrace, washes
Foxtail barley (<i>Hordeum jubatum</i>)	Introduced grass	Floodplain
Fremont cottonwood (<i>Populus fremontii</i>)	Native tree	Floodplain
Greasewood (<i>Sarcobatus vermiculatus</i>)	Native shrub	Floodplain, terrace, and wash areas with available groundwater
Hardheads (Russian knapweed) (<i>Acroptilon repens</i>)	Invasive perennial	Floodplain, washes
Herb sophia (<i>Descurainia sophia</i>)	Introduced annual	Floodplain, terrace
Horsetail milkweed (<i>Asclepias subverticillata</i>)	Native perennial	Floodplain
Indian ricegrass (<i>Achnatherum hymenoides</i>)	Native grass	Floodplain, disturbed and undisturbed terrace areas, and infrequently in washes
Inland saltgrass (<i>Distichlis spicata</i>)	Native grass	Found on the floodplain and wetlands within the floodplain
James' galleta (<i>Pleuraphis jamesii</i>)	Native grass	Terrace
Prickly pear cactus (<i>Opuntia</i> spp.)	Native cactus	<i>O. polyacantha</i> and <i>O. phaeacantha</i> have been identified in terrace areas
Rubber rabbitbrush (<i>Ericameria nauseosa</i>)	Native shrub	Floodplain, terrace, and wash, early successional
Russian olive (<i>Elaeagnus angustifolia</i>)	Invasive tree	Floodplain
Russian thistle (<i>Salsola tragus</i>)	Invasive annual	Floodplain, terrace, and wash, especially in disturbed areas
Saltcedar (<i>Tamarix</i> sp.)	Invasive shrub	Floodplain
Saltlover (<i>Halogeton glomeratus</i>)	Invasive annual	Terrace, floodplain, and wash
Sand dropseed (<i>Sporobolus cryptandrus</i>)	Native grass	Terrace, wash
Shadscale saltbush (<i>Atriplex confertifolia</i>)	Native subshrub	Floodplain, terrace, washes
Threadleaf ragwort (<i>Senecio flaccidus</i>)	Native shrub	Terrace
Valley saltbush (<i>Atriplex cuneata</i>)	Native shrub	Predominantly in undisturbed terrace areas

**APPENDIX H:
EVALUATION OF HUMAN HEALTH EFFECTS FROM TRANSPORTATION**

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1.0 Introduction

This appendix summarizes human health considerations associated with transporting waste materials resulting from the proposed decommissioning and disposal of evaporation pond. Both radiological and nonradiological transportation impacts would result from shipment of materials and pond wastes. Radiological impacts are those associated with the effects from low levels of radiation emitted during incident-free transportation and from the accidental release of radioactive materials. Nonradiological impacts are independent of the nature of the cargo being transported and are expressed as traffic accident fatalities resulting only from the physical forces that accidents could impart to humans. This appendix contains the detailed transportation analysis, including methodology and assumptions.

Transportation packages containing radioactive materials emit low levels of radiation; the amount of radiation depends on the characteristics of the transported materials and the amount of shielding provided by the package. For incident-free transportation, the potential human health impacts from the radiation field surrounding the radioactive packages were estimated for transportation workers and populations along the route (termed off-traffic or off-link), people sharing the route (termed in-traffic or on-link), and people at rest areas and stops along the route.

The system for analyzing the Radiological Impact of the Transportation of Radioactive Materials (RADTRAN) 6.02.1 computer program (Weiner et al., 2013) was used to estimate impacts on transportation workers and populations, as well as the impact to a maximally exposed individual (MEI), who may be a worker or a member of the public (for example, a resident along the route, a person struck in traffic, a gasoline station attendee, or an inspector). Incident-free radiological health impacts are expressed in terms of additional latent cancer fatalities (LCFs). Radiological health impacts from accidents are also expressed as additional LCFs¹, and nonradiological accident risk as additional immediate (traffic) fatalities.

Transportation accidents involving radioactive materials present both nonradiological and radiological risks to workers and the public. Nonradiological impacts of transportation accidents include traffic accident fatalities. The radiological impact of a specific accident is expressed in terms of probabilistic risk (i.e., dose risk), which is defined as the accident probability (i.e., accident frequency) multiplied by the accident consequences (i.e., dose). The overall radiological risk is obtained by summing the individual radiological risks for a range of accidents. The analysis of accident risks considers a spectrum of accident severities ranging from high probability accidents of low severity (e.g., a fender bender) to hypothetical high-severity accidents having low probabilities of occurrence. Because it is impossible to predict the specific location of an off-site transportation accident, generic atmospheric conditions (the United States averaged atmospheric data) as included in RADTRAN computer program were selected for the risk and consequence assessments.

Transportation packaging for radioactive materials must be designed, constructed, and maintained to contain the package contents and provide radiation shielding. The type of packaging used is determined by the total radioactive hazard presented by the material within the packaging. For the waste generated in this Environmental Assessment (EA), which is a low specific activity waste, as indicated in the U.S. Department of Transportation (USDOT)

¹ LCFs associated with radiological exposure were estimated by multiplying the occupational (worker) and public dose by a dose conversion factor of 0.0006 LCFs per rem or person-rem of exposure (DOE, 2003).

regulation 49 Code of Federal Regulations (CFR) Part 173, it may be shipped in a shipping container such as Industrial or Type A Packaging (49 CFR 173.427). In this EA, the selected packaging is a 4 x 4 x 8 ft Super Sack, with a maximum capacity of 15,000 lbs (6,804 kg).

Transportation of the waste materials would occur on exclusive and dedicated use vehicles (e.g., trucks or rails). Offsite transportation of the radioactive material has a defined regulatory limit of 10 millirem (mrem) per hour at approximately 6.6 feet (ft) from the outer lateral surfaces of the vehicle (10 CFR 71.47; 49 CFR 173.441). The external dose rate of package is driven by their radiological characteristics of its content. Given the composition of waste consists of a very low concentration of uranium, a naturally occurring radioactive material, with a maximum uranium content of 0.005 percent, a dose rate of 0.01 mrem per hour at 3.3 ft from the transporter (truck or railcar) was assigned.

Potential human health impacts from transportation accidents were evaluated. The impact of a specific radiological accident is expressed in terms of probabilistic risk, which is defined as the accident probability (accident frequency) multiplied by the accident consequence. The overall risk was obtained by summing individual risks from all reasonably conceivable accidents. The analysis of accident risks accounts for a spectrum of accidents ranging from high-probability accidents of low severity (e.g., a fender-bender) to hypothetical high-severity accidents that have a corresponding low probability of occurrence.

The expected very low concentrations of radioactive material in the evaporation pond waste pose very little risk, in general, to human health and the environment, even under accident conditions, as summarized hereafter. Nevertheless, in the event of a radiological release from a shipment along a route, local emergency response personnel would be the first to arrive at the accident scene. It is expected that response actions would be taken in accordance with the guidance in the *National Response Framework* (DHS, 2019). Based on the initial assessment at the scene, training, and available equipment, first responders would involve Federal and state resources as necessary. First responders and/or Federal and state responders would initiate actions in accordance with the *USDOT Emergency Response Guidebook* (USDOT, 2016) to isolate the incident and perform the actions necessary to protect human health and the environment (such as evacuations or other means to reduce or prevent impacts to the public). Cleanup actions are the responsibility of the carrier. LM would partner with the carrier, shipper, and applicable state and local jurisdictions to ensure cleanup actions met regulatory requirements.

Incident-free radiological health impacts are expressed as additional LCFs. Radiological accident health impacts are also expressed as additional LCFs, and nonradiological accident risks are expressed in terms of additional immediate (traffic) fatalities. LCFs associated with radiological exposure were estimated by multiplying the occupational (transport crew) and public dose by a risk factor of 0.0006 (6.0×10^{-4}) LCFs per roentgen equivalent man (rem) or person-rem of exposure (DOE, 2003). Impacts from transporting wastes were calculated assuming that the wastes are shipped by truck or a combination of truck and rail².

In determining transportation risks, per-shipment risk factors were calculated for incident-free and accident conditions using the RADTRAN 6.02 computer program (Weiner et al., 2013) in conjunction with the Web-Transportation Routing Analysis Geographic Information System

² Because Shiprock does not have rail connections, waste shipments would have to be transported via truck to an intermodal location, considered to be the Mentmore Transload Station at the Gallup Energy Logistics Park just northwest of Gallup, New Mexico.

(Web-TRAGIS) computer program (Peterson, 2018) to choose transportation routes in accordance with USDOT regulations, as specified in 49 CFR Part 397. The Web-TRAGIS program provides population density estimates for rural, suburban, and urban areas along the routes based on the 2012 United States census. The population density estimates were escalated to 2025 population density estimates using state-level 2010 and 2020 census data and assuming population growth between 2010 and 2020 would continue through 2025. The region of influence (ROI) of this analysis is the affected population, including individuals living within 0.5 miles (mi) (804 meters [m]) of each side of the road or rail line for incident-free operations and, for accident conditions, individuals living within 50 mi (80 kilometer [km]) of the accident. The MEI was assumed to be a receptor located 330 ft directly downwind from the accident.

All Motor Carriers selected for transport of the wastes will be thoroughly vetted through a formalized selection process and must have USDOT Satisfactory Safety Ratings and DOE Motor Carrier Evaluation Program approvals. To mitigate the possibility of an accident, DOE-issued Manual 460.2-1A (DOE, 2008), *Radioactive Material Transportation Practices Manual for Use with DOE O 460.2B*³. As specified in this manual, carriers are expected to exercise due caution and care in dispatching shipments. According to the manual, the carrier determines the acceptability of weather and road conditions, whether a shipment should be held before departure, and when actions should be taken while enroute. The manual emphasizes that shipments should not be dispatched if severe weather or bad road conditions make travel hazardous. Current weather conditions, the weather forecast, and road conditions would be considered before dispatching a shipment. Conditions at the point of origin and along the entire route would be considered. The Shiprock disposal site operations contractor will inspect all trucks with the driver before the load is released. Daylight driving will be emphasized.

Route-specific accident and fatality rates for commercial truck transports and rail shipments were used to determine the risk of traffic accident fatalities. For offsite transport of radioactive waste, a weighted average accident and fatality rate was calculated based on the state-level distances travelled and their associated accident and fatality rates. The accident and fatality values selected were the state-level total accident and fatality rates provided in the Saricks and Tompkins report (Saricks and Tompkins, 1999); adjusted for underreporting (UMTRI, 2003). The rates in the Saricks and Tompkins report are cited in terms of accident and fatality per car- and railcar-km traveled.

1.1 Affected Environment

Route characteristics that are important to the radiological risk assessment include the total shipment distance and population distribution along the route. The specific route selected determines both the total potentially exposed population and the expected frequency of transportation-related accidents. Route characteristics for routes analyzed in this EA are summarized in Table H-1. Rural, suburban, and urban areas were characterized according to the following breakdown (Peterson, 2018):

- Rural population densities range from 0 to 140 persons per square mi (0 to 54 persons per square km)
- Suburban population densities range from 140 to 3,326 persons per square mi (55 to 1,284 persons per square km)

³ DOE M 460.2-1A was published in 2008 for the action in DOE O 460.2A, which is now revised as DOE O 460.2B.

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- Urban population densities include all population densities greater than 3,326 persons per square mi (1,284 person per square km)

The affected population for route characterization and incident-free dose calculation includes all persons living within 0.5 mi (805 m) of each side of the transportation route.

Table H-1. Off-site transport truck and rail route characteristics

Origin	Destination	Nominal Distance (km)	Distance Traveled in Zones (km)			Population Density in Zone ^a (number per square km)			Number of Affected Persons ^b
			Rural	Suburban	Urban	Rural	Suburban	Urban	
Truck									
Shiprock	EnergySolutions	995	843	121	31	9	583	2,020	226,674
	WCS	965	849	97	20	9	343	1,840	124,403
	GELP ^c	146	124	23	0	40	278	0	18,227
Rail									
Mentmore	EnergySolutions	1,877	1691	175	21	6	532	2415	244,696
	WCS	1,377	928	402	47	9	299	3682	484,694

Key: GELP = Gallup Energy Logistics Park; km = kilometer; WCS = Waste Control Specialists

^a Population densities were projected to 2025 using state-level data from the 2020 census and assuming state population growth rates from 2010 to 2020 continue to 2025.

^b For offsite shipments, the estimated number of persons residing within 0.5 mi along the transportation route, projected to 2025.

^c Because Shiprock does not have a rail yard, truck transport from a nearby rail yard (Mentmore Transload Station at the GELP was used) would be required.

Note: Because all numbers are rounded to nearest digit, total distance may be different from some of individual segments.

Figure H-1 and Figure H-2 show the specific routes for the truck and rails transports generated using Web-TRAGIS computer program (Peterson, 2018). Truck transports use the U.S. Highway 491 South (for transports to WCS in Andrews County, Texas) and U.S. Highway 491 North (for transports to EnergySolutions in Clive, Utah). Rail transports will use Mentmore transload station at the Gallup Energy Logistics Park (GELP) as an intermodal facility.

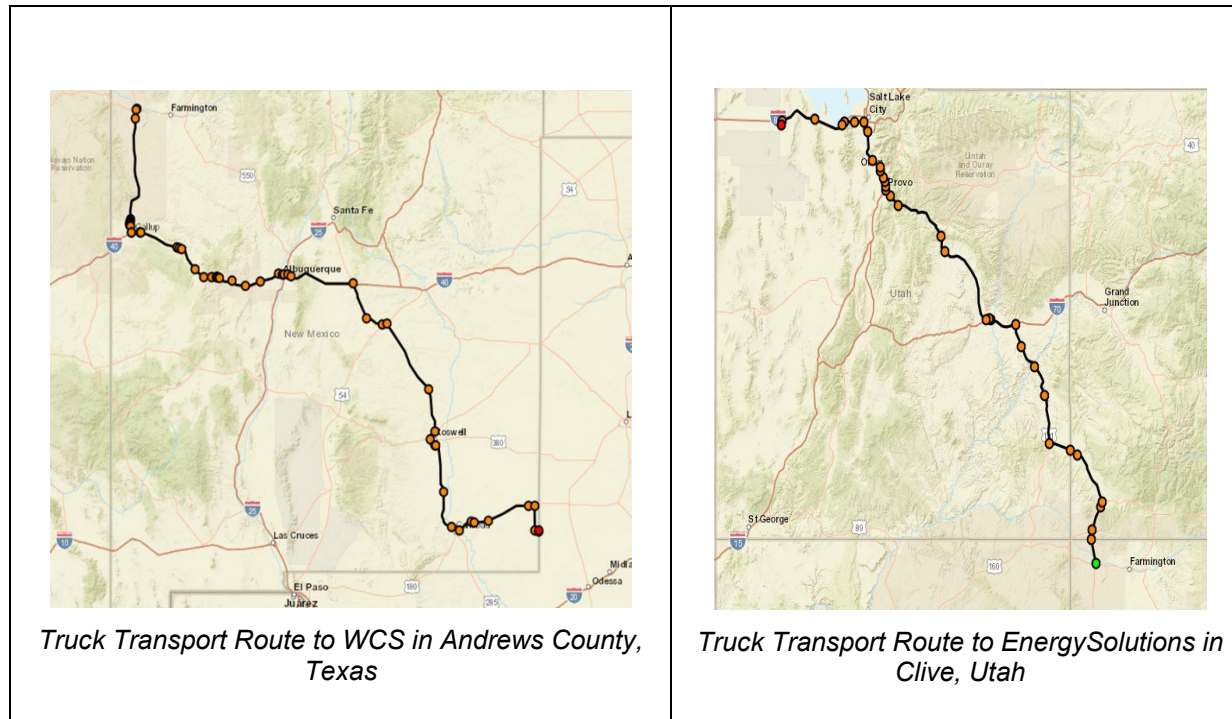


Figure H-1. Truck transportation routes to Waste Control Specialists (WCS) and EnergySolutions

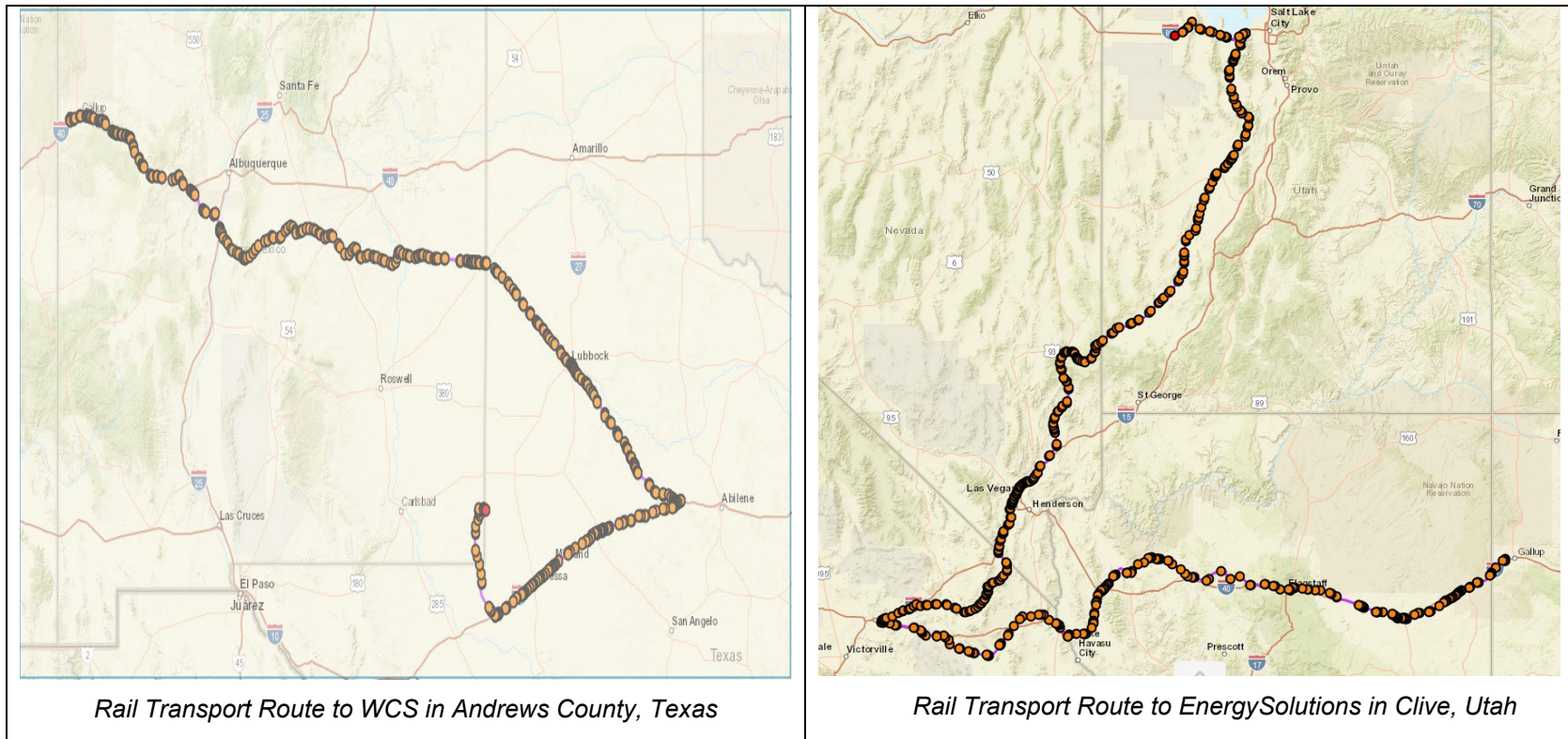


Figure H-2. Rail transport routes to Waste Control Specialists (WCS) and EnergySolutions

1.2 Environmental Consequences

1.2.1 Incident-Free Transportation Risks

During incident-free transportation of the Shiprock pond waste materials, a radiological dose results from exposure to the external radiation field that surrounds the shipping containers. The population dose is a function of the number of people exposed, their proximity to the containers, their length of time of exposure, and the intensity of the radiation field surrounding the containers.

Radiological impacts were determined for crew members (truck and train drivers) and the general population during incident-free transportation. The general population is composed of the persons residing within 0.5 mi on either side of the truck route (off-link), persons sharing the road (on-link), and persons at stops. Exposures to workers who would load and unload the shipments are not included in this analysis but are included in the occupational estimates for plant workers. Exposures to inspectors are evaluated and presented separately in this section.

Collective doses for the crew and general population were calculated by using the RADTRAN 6.02.1 computer code (Weiner et al., 2013; Weiner et al., 2014). Offsite transportation of the radioactive material has a defined regulatory limit of 10 mrem per hour at 6.6 ft from the outer lateral surfaces of the vehicle (10 CFR 71.47; 49 CFR 173.441). The external dose rate of a package is driven by the radiological characteristics of its content. Given the very low concentration of the natural uranium content of the pond waste, the radioactive material shipments were assigned an external dose rate 0.01 mrem per hour at 3.3 ft (1 m) from the transporter (truck or a rail car).

To calculate the collective dose, a unit risk factor for a single shipment (a per-shipment risk factor) between a given origin and destination was developed to estimate the impact of transporting one shipment of radioactive material over the shipment distances in various population density zones. The unit dose is a function of the distance and exposure time for both the driver and the exposed public. To include the potential of traffic congestion, the analysis assumed that for 10 percent of the time, travel through suburban and urban zones would encounter rush hour conditions, leading to a lower average speed and higher traffic density.

For truck shipments, the following hypothetical scenarios were evaluated to determine the dose to the MEI in the general population (DOE, 2002c):

- A person caught in traffic and located 4 ft (1.2 m) from the surface of the shipping container for 30 minutes
- A resident living 98 ft (30 m) from the highway used to transport the shipping container
- A service station worker at a distance of 52 ft (16 m) from the shipping container for 50 minutes

The following hypothetical scenarios were also evaluated for railcar shipments (DOE, 2002c):

- A rail yard worker working at a distance of 33 ft (10 m) from the shipping container for 2 hours
- A resident living 98 ft (30 m) from the rail line on which the shipping container is being transported
- A resident living 656 ft (200 m) from a rail stop during classification and inspection for 20 hours

The maximally exposed transportation worker (excluding drivers) for both truck and rail shipments would be an individual inspecting the cargo at a distance of 1 m from the shipping container for 1 hour.

The hypothetical MEI, a resident living near the road or rail, doses were accumulated over the total transportation shipments, but for the scenario involving an individual caught in traffic next to a shipping container, the radiological exposures were calculated for only one event, because it was considered unlikely that the same individual would be caught in traffic next to all containers for all shipments.

The radiological risks from transporting the radioactive materials are estimated in terms of the number of LCFs among the crew and the exposed population. A health risk conversion factor of 0.0006 LCF per rem or person-rem of exposure is used for both the public and workers (DOE, 2003).

1.3 Transportation Risk Results

The transportation risk assessment considers the probabilities and consequences of a spectrum of potential accident severities using a methodology developed by NRC (NRC, 1977). For the spectrum of accidents considered in the analysis, accident consequences in terms of collective “dose risk” to the population within 50 mi were determined using the RADTRAN 6.02 computer program (Weiner et al., 2013; Weiner et al., 2014).

The accident consequence assessment considers the potential impacts of severe transportation accidents. In terms of risk, the severity of an accident must be viewed in terms of potential radiological consequences, which are directly proportional to the fraction of the radioactive material within a transport package that is released to the environment during the accident. Although accident severity regions span the entire range of mechanical and thermal accident loads, they are grouped into accident categories that can be characterized by a single set of release fractions and are, therefore, considered together in the accident consequence assessment (NRC, 1977). The accident category severity fraction is the sum of all conditional probabilities in that accident category. For this EA, the severity categories in the *Radioactive Material Transportation Study* (NRC, 1977) were used.

For off-site transportation of radioactive materials and wastes, route-specific accident rates and accident fatality risks were determined. The values selected were the total state-level accident and fatality rates provided in ANL/ESD/TM-150 (Saricks & Tompkins, 1999). For the truck transports, the state-level rates were then adjusted based on the distance traveled in each state to derive a route-specific accident and fatality rate per truck-km. Because of the potential underreported data that were used in Saricks and Tompkins report, state-level truck accident and fatality rates in the Saricks and Tompkins report were increased by factors of 1.64 and 1.57, respectively, to account for the underreporting (Saricks & Tompkins, 1999; UMTRI, 2003).

Radiological consequences were calculated by assigning radionuclide release fractions on the basis of the type and form of radioactive material, the type of shipping container, and the accident severity category. For this analysis, release fractions for the pond wastes were selected based on pond sample test results providing the details on the potential fractions of fine particles and the related assumptions in the *Radioactive Material Transportation Study* (NRC, 1977).

Table H-2 presents the per-shipment risk factors (unit risk factor for a single shipment) that have been calculated for the collective populations of exposed persons and for the crew for the anticipated routes and shipment configurations. Radiological risks are presented in terms of

doses and LCFs per shipment for each unique route, material, and container combination. The radiological risks would result from potential exposure of people to external radiation emanating from the packaged waste. The exposed population includes the off-link public (people living along the route), on-link public (pedestrian and car occupants along the route), and public at rest and fuel stops. LCF risk factors were calculated by multiplying the accident dose risks by a health risk conversion factor of 0.0006 LCF per rem or person-rem of exposure (DOE, 2003).

For transportation accidents, the risk factors are given for both radiological impacts, in terms of potential LCFs in the exposed population, and nonradiological impacts, in terms of nonoccupational number of traffic fatalities. LCFs represent the number of additional LCFs among the exposed population. Under accident conditions, the population would be exposed to radiation from released radioactivity (if the package were damaged) and would receive a direct dose (even if the package is unbreached). For accidents that had no release, the analysis conservatively assumed that it would take approximately 12 hours to remove the package or commercial vehicle from the accident area (DOE, 2002a).

Table H-2. Risk factors per shipment of waste

Transport Modes	Origin	Transport Destination	Incident-Free				Accident	
			Crew Dose (person-rem)	Crew Risk (LCF) ^a	Population Dose (person-rem) ^b	Population Risk (LCF) ^a	Radiological Risk (LCF) ^a	Non-radiological Risk (Traffic Fatalities)
Truck	Shiprock	EnergySolutions	3×10^{-6}	2×10^{-9}	8×10^{-6}	5×10^{-9}	3×10^{-9}	0.00004
		WCS	3×10^{-6}	2×10^{-9}	7×10^{-6}	4×10^{-9}	5×10^{-10}	0.00003
		GELP ^c	5×10^{-7}	3×10^{-10}	5×10^{-7}	3×10^{-10}	1×10^{-10}	0.000005
Rail	Mentmore ^c	EnergySolutions	2×10^{-3}	9×10^{-7}	2×10^{-3}	1×10^{-6}	6×10^{-9}	0.002
		WCS	1×10^{-3}	7×10^{-7}	2×10^{-3}	1×10^{-6}	1×10^{-9}	0.001

Key: GELP = Gallup Energy Logistics Park; LCF = latent cancer fatality; WCS = Waste Control Specialists

^a Risk is expressed in terms of LCFs. Radiological risk is calculated for one-way travel while nonradiological risk is calculated for two-way travel. Accident dose risk can be calculated by dividing the risk values by 0.0006 (DOE, 2003). LCF risks are rounded to one non-zero digit.

^b Person-rem is the exposure of a population to radiation and is the average dose per individual (in rem) multiplied by the number of people exposed. Rem is a unit of effective absorbed dose of ionizing radiation in human tissue.

^c Because Shiprock does not have a rail yard, truck transport to a nearby rail yard (Mentmore Transload Station at the Gallup Energy Logistics Park was used) would be required. The analysis considers dedicated train transports with 22 Shiprock pond wastes railcars.

Table H-3 shows the risks of transporting pond wastes to various disposal locations. The table summarizes the risk results for Alternative 1 and Alternative 2 transports. Under the No Action Alternative, the pond wastes would remain at the site, and therefore, no offsite transportation is evaluated.

The risks are calculated by multiplying the previously given per-shipment factors by the number of shipments over the duration of the program. The Shiprock pond wastes consists of pond sediments, liner, and subsoil, all of which are conservatively assumed to have the same natural uranium concentration. It is estimated that the different wastes would have a total volume of 20,000 cubic yds. Based on the Federal gross vehicle weight limits (23 CFR 658.17) and the expected mass of the wastes, there would be approximately 1,324 truck shipments and nine train (or rail) shipments to various disposal locations. Each train would consist of 22 railcars, each of which would contain seven Super Sacks. Each truck would transport three Super Sacks.

Table H-3. Risks of transporting Shiprock evaporation pond radioactive waste

Alternatives	Number of Shipments	One-way km Traveled	Incident-Free				Accident	
			Crew		Population		Radiological Risk	Non-radiological Risk
			Dose (person -rem) ^a	LCFs ^a	Dose (person -rem) ^b	LCFs		
Alternative 2: All Truck Transports								
Shiprock disposal site to EnergySolutions	1,324	1,317,380	0.004	3 × 10 ⁻⁶	0.01	6 × 10 ⁻⁶	4 × 10 ⁻⁶	0.06
Shiprock disposal site to WCS	1,324	1,278,980	0.004	2 × 10 ⁻⁶	0.009	6 × 10 ⁻⁶	7 × 10 ⁻⁷	0.04
Alternative 3: Truck and Rail Transport								
Truck: Shiprock disposal site to GELP	1,324	194,630	0.0006	4 × 10 ⁻⁷	0.0006	4 × 10 ⁻⁷	1 × 10 ⁻⁷	0.007
Rail: GELP to EnergySolutions	9	16,990	0.01	8 × 10 ⁻⁶	0.02	1 × 10 ⁻⁵	6 × 10 ⁻⁸	0.013
Rail: GELP to WCS	9	12,402	0.01	7 × 10 ⁻⁶	0.02	1 × 10 ⁻⁵	1 × 10 ⁻⁷	0.009
Truck/Rail to EnergySolutions	1,333	211,620	0.01	8 × 10 ⁻⁶	0.02	1 × 10 ⁻⁵	2 × 10 ⁻⁷	0.02
Truck/Rail to WCS	1,333	207,030	0.01	7 × 10 ⁻⁶	0.02	1 × 10 ⁻⁵	2 × 10 ⁻⁷	0.02

Key: GELP = Gallup Energy Logistics Park; LCF = latent cancer fatality; WCS = Waste Control Specialists

^a Risk is expressed in terms of LCFs. Radiological risk is calculated for one-way travel while nonradiological risk is calculated for two-way travel. Accident dose risk can be calculated by dividing the risk values by 0.0006 (DOE, 2003). LCF risks are rounded to one non-zero digit.

^b Person-rem is the exposure of a population to radiation and is the average dose per individual (in rem) multiplied by the number of people exposed. Rem is a unit of effective absorbed dose of ionizing radiation in human tissue.

As indicated in Table H-3, all shipment risk factors are less than one. This means that no LCFs or traffic fatalities are expected to occur during these transports.

The maximum estimated doses to workers and the public MEIs are presented in Table H-4, considering all shipment types. Doses are presented on a per-event basis (rem per event, per exposure, or per shipment), because it is generally unlikely that the same person would be exposed to multiple events. A member of the public living along the route would likely receive multiple exposures from passing shipments during the period analyzed. The cumulative dose to this resident is calculated by assuming all the shipments pass his or her home. The cumulative dose is calculated assuming that the resident is present for every shipment and is unshielded at a distance of approximately 98 ft from the route. Therefore, the cumulative dose depends on the number of shipments passing a particular point and is independent of the actual route being considered.

If one considers the maximum resident dose provided in Table H-4, then the maximum dose to this resident (if all the materials were shipped via this route [a total of 1,324 truck shipments or nine train shipments]) would be approximately 0.00077 mrem for truck with a risk of developing an LCF of approximately 5×10^{-7} (0.0000005), and 0.0003 mrem for rail with a risk of developing an LCF of 2×10^{-7} (0.0000002).

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Table H-4. Estimated dose to the maximally exposed individual under incident-free transportation conditions.

Receptor	Dose to Maximally Exposed Individual
Workers	
Crew member (truck driver)	2 rem per year ^a
Inspector	0.000039 rem per event per hour of inspection
Rail yard workers	0.00027 rem per event
Public	
Resident (along the truck route)	0.00000000058 rem per event
Resident (along the rail route)	0.000000032 rem per event
Person in traffic congestion	0.000032 rem per event per half an hour stop
Person at a rest stop/gas station	0.0002 rem per event per hour of stop
Gas station attendant	0.0000005 rem per event

Key: DOE = U.S. Department of Energy; rem = roentgen equivalent man

^a In addition to complying with DOT requirements, a DOE-LM employee would also need to comply with 10 CFR 835, which limits worker radiation doses to 5 rem per year. DOE's goal is to maintain radiological exposure as low as reasonably achievable. DOE has, therefore, established the administrative control level of 2 rem per year (DOE, 2017). Based on the number of commercial shipments and the total crew dose to two drivers, a commercial driver dose would not exceed this administrative control limit. Therefore, the administrative control limit is reflected in this table for the maximally exposed truck crew member.

Based on the results presented, the following conclusions have been reached (see Table H-4):

- The transportation of radioactive pond waste materials would likely result in no additional fatalities as a result of radiation, either from incident-free operation or postulated transportation accidents.
- The nonradiological accident risks (the potential for fatalities as a direct result of traffic accidents) are greater than the radiological accident risks.
- It is estimated that no potential traffic fatalities would be expected over the duration of the activities. Considering that the transportation activities analyzed in this EA would occur over approximately 7 to 8 months and that the average number of traffic fatalities in the United States is approximately 34,030 per year for the 10-year period 2010 through 2019 (USDOT, 2021b), the incremental increase in risk to the general population from shipments associated with the Shiprock evaporation pond decommissioning would, therefore, be very small and would not contribute to cumulative impacts.

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**APPENDIX I:
SUMMARY OF ENVIRONMENTAL IMPACTS**

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Table I-1. Summary of environmental impacts and best management practices (BMPs) to avoid or minimize impacts

Affected Environment	Alternative 1 – No Action Alternative	Alternative 2 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway Transport	Alternative 3 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway/Rail Transport
Air Quality	<p>Short-Term: Maintenance activities would continue to generate very small amounts of nonradiological air emissions due to maintenance activities.</p> <p>Long-Term: Same as short-term</p>	<p>Short-Term: Minor amounts of (1) combustive emissions due to the use of fossil-fuel-powered equipment, trucks, and worker commuter vehicles and (2) fugitive dust emissions from bare soils and the operation of vehicles and equipment on exposed soils would not result in adverse air quality impacts</p> <p>Long-Term: GHG emissions would result in a negligible contribution to climate change.</p> <p>BMPs: Dust suppression techniques applied during construction activities.</p>	<p>Short-Term: Similar to Alternative 2. Train transport of waste would result in higher emissions of most criteria pollutants but lower GHG emissions versus transport by truck.</p> <p>Long-Term: Similar to Alternative 2</p> <p>BMPs: Similar to Alternative 2</p>
Biological and Natural Resources	<p>Short-Term: No impact to wildlife and/or domestic animals because no construction activities would occur, the evaporation pond would remain in its current location, and the existing chain-link fence would prohibit terrestrial wildlife and/or domestic animals from entering the pond area.</p> <p>Long-Term: Negligible impacts to wildlife because no decommissioning activities would occur.</p> <p>No impacts to special-status species because there are no special-status species known to occupy the area within the evaporation pond fence.</p> <p>The vegetation community would continue to slowly develop within the fence, but exclusion</p>	<p>Short-Term: Avoidance and mitigation measures developed in consultation with Navajo Nation Department of Fish and Wildlife and the USFWS, as applicable, would be implemented during construction activities to avoid areas of potential special-status species and their habitat (i.e., Mesa Verde cactus, Colorado pikeminnow, razorback sucker).</p> <p>Long-Term: Some wildlife species could be temporarily displaced during construction activities; however, full access to the formerly fenced area would be available upon completion of full decommissioning and disposal of the evaporation pond. Additionally, revegetated areas could persist for decades afterward until later-successional plants became established.</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p> <p>BMPs: Similar to Alternative 2</p>

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Affected Environment	Alternative 1 – No Action Alternative	Alternative 2 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway Transport	Alternative 3 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway/Rail Transport
	<p>of wildlife would negate any indirect beneficial impact to wildlife from improved vegetation.</p> <p>BMPs: Institutional controls maintained for the site that include fencing and gates that prohibit wildlife entry and noxious weed control</p>	<p>BMPs: Project controls to minimize and eradicate the establishment and spread of invasive (vegetative) species.</p>	
Cultural Resources and Native American Tribal Resources	<p>Short-Term: No impact</p> <p>Long-Term: No impact</p>	<p>Short-Term: No impact because there are no historic properties or other cultural resources identified within the APE.</p> <p>Long-Term: Same as short-term</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p>
Socioeconomics and Environmental Justice	<p>Short-Term: No effect on socioeconomics or environmental justice because workforce requirements would not change socioeconomic resources in the region.</p> <p>Long-Term: Same as short-term</p>	<p><i>Socioeconomics</i></p> <p>Short-Term: Negligible socioeconomic impacts compared to No Action Alternative. The number of full-time personnel under this alternative would be the same as under Alternative 1.</p> <p>Long-Term: There would be potential for long-term benefits to Shiprock CDP residents from excavation and off-site waste disposal, which would eliminate any potential for human exposure from contaminated sediments. There would also be potential for positive impacts if the land is reverted to the community for use.</p> <p><i>Environmental Justice</i></p> <p>Short-term: No disproportionately high or adverse effects would occur to minority or low-income populations as a result of Alternative 2 because no minority or low-income populations were identified within the ROI/project boundary</p> <p>Long-Term: Same as short-term.</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p>

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Affected Environment	Alternative 1 – No Action Alternative	Alternative 2 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway Transport	Alternative 3 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway/Rail Transport
Geology and Soils	<p>Short-Term: Under the No Action Alternative, the evaporation pond would remain in its current location and contaminated groundwater from the floodplain would continue to be pumped into the pond. The liner would continue to degrade, ultimately leading to dissolved contaminants coming into direct contact with the land surface and underlying soils.</p> <p>Long-Term: A secondary source of uranium and other hazardous constituents would be expected as a result of the No Action Alternative because chemical partitioning of dissolved compounds between the infiltrating water and soils underlying the evaporation pond would be created.</p>	<p>Short-Term: Adverse impacts to site soils would be expected from construction activities such as removal of vegetation, site excavation/grading, hauling and placement of fill material. Negligible soil contamination would be expected from trucks and mechanical equipment.</p> <p>Long-Term: No impact</p> <p>BMPs: Sedimentation and erosion controls (i.e., silt fencing, straw bales) to reduce runoff and soil erosion during construction activities.</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p> <p>BMPs: Similar to Alternative 2</p>
Human Health and Safety	<p>Short-Term: There would be health impacts to potential onsite trespassers frequently exposed to uranium-234, uranium-238 and arsenic due to ingestion of pond surface water. Continued leakage from the pond to the subsurface would not impact human health onsite since terrace groundwater is not used as a potable source.</p> <p>Long-Term: Same as short-term impacts plus no offsite human health impacts via atmospheric transport of dusts (assuming loss of surface water if pumping were to cease) or groundwater migration of nitrate (the only migration contaminant of concern in groundwater) from pond leakage to the subsurface due to institutional controls that prohibit drinking water well the installation. Nitrate in groundwater is not expected to impact the San Juan River.</p>	<p>Short-Term: During remediation of the pond, no short-term onsite human health impacts are likely for a pond remediation worker due to health and safety BMPs and the use of PPE. No short-term impacts are estimated for offsite individuals during remediation via atmospheric transport of pond sediment dusts generated during remediation. Remediation is not expected to impact human health via groundwater exposures because institutional controls prevent groundwater usage at onsite and offsite locations.</p> <p>Long-Term: Following completion of the removal of pond media and liner, there are no human health impacts expected for onsite or offsite individuals. No offsite groundwater impacts are expected for locations directly downgradient of the pond area following remediation, including the San Juan River,</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p> <p>BMPs: Similar to Alternative 2</p>

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Affected Environment	Alternative 1 – No Action Alternative	Alternative 2 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway Transport	Alternative 3 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway/Rail Transport
	BMPs: Occupational hazards minimized by adherence to health and safety regulations and standards; engineering controls; and PPE used for work with hazardous materials.	because all primary source media and contaminants will have been removed. BMPs: Occupational hazards minimized by adherence to health and safety regulations and standards; engineering controls; and PPE used for work with hazardous materials.	
Land Use and Recreation	Short-Term: No impact because there would be no changes to land use or recreation. Long-Term: Same as short-term	Short-Term: Beneficial impact because the future use of the decommissioned evaporation pond land area would be determined with the Navajo Nation through a NEPA evaluation. Additionally, no impacts to recreational resources would be expected as a result of Alternative 2 in the nearby town of Shiprock. Long-Term: Same as short-term	Short-Term: Similar to Alternative 2 Long-Term: Similar to Alternative 2
Noise and Vibration	Short-Term: No impact because there would be no construction/demolition activity and noise levels would not change. Long-Term: Same as short term	Short-Term: Temporary impact to noise-sensitive receptors within the vicinity of the construction site; however, BMPs would be implemented to reduce noise levels and noise and vibration impacts would cease upon construction completion. Long-Term: No impact. BMPs: Implementation and adherence to hearing conservation program.	Short-Term: Identical to Alternative 2. No sensitive locations are near the GELP transload facility, and temporary noise increases associated with transload activities would have minimal impacts. Long-Term: No impact. Noise would be temporary lasting only for the duration of the Project. BMPs: Similar to Alternative 2
Solid Waste and Waste Management	Short-Term: No impact because no waste would be generated over baseline conditions. Long-Term: Same as short-term	Short-Term: Potential environmental consequences associated with receipt, management, and disposal of wastes up to the quantities or limits licensed, permitted, or approved were considered in the NEPA evaluations for the disposal facilities and are not included in this EA. The quantity of waste generated under this alternative is negligible compared to the facilities' licensed/permitted/approved capacities and	Short-Term: Similar to Alternative 2 Long-Term: Same as short-term

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Affected Environment	Alternative 1 – No Action Alternative	Alternative 2 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway Transport	Alternative 3 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway/Rail Transport
		therefore the potential solid waste and waste management impacts would also be negligible. Long-Term: Same as short-term	
Traffic and Transportation	Short-Term: No impact Long-Term: No impact	<p><i>Traffic</i></p> <p>Short Term: Traffic impacts from implementation of Alternative 2 would be negligible. The expected small work force, minor equipment and delivery requirements, and availability of existing highway infrastructure do not indicate that transportation would be an issue of concern. Truck shipments under would not be expected to impact highway capacity or existing use patterns. The impact of project traffic on traffic patterns is also expected to be minimal and would mostly occur within immediate vicinity of project area where construction equipment and haul trucks would be concentrated.</p> <p>Long-Term: No Impact.</p> <p><i>Transportation</i></p> <p>Short-Term: No fatalities would be expected as a result of transportation of decommissioning and disposal of the evaporation pond. Additionally, no potential traffic fatalities would be expected as a result of Alternative 2.</p> <p>Long-Term: No impact</p> <p>BMPs: Adherence to traffic laws, signage, school zones, bus stops, speed limits, and pedestrian crossings.</p> <p>Implementation of safety options in conjunction with appropriate Federal, state, and local recommendations.</p>	Short-Term: Similar to Alternative 2 Long-Term: Similar to Alternative 2 BMPs: Similar to Alternative 2

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Affected Environment	Alternative 1 – No Action Alternative	Alternative 2 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway Transport	Alternative 3 – Full Decommissioning and Disposal of Existing Evaporation Pond at Off-Site Licensed Waste Facilities by Highway/Rail Transport
		Implementation and adherence to day-to-day health and safety programs.	
Visual Resources	<p>Short-Term: Impacts to the surrounding area from the low-quality visual resource resulting from existing pond. Impacts would be mitigated by creating visual barriers between the pond and residential neighbors to the west and north.</p> <p>Long-Term: Same as short-term</p> <p>BMPs: Implementation of visual barriers.</p>	<p>Short-Term: Positive impact on the visual quality of the surrounding area as a result of removal of the evaporation pond because many nearby residents have a strong negative opinion regarding the visual quality of their neighborhood due to the evaporation pond.</p> <p>Long-Term: Same as short-term</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p>
Water Resources	<p>Short-Term: Impacts from contaminated groundwater from the floodplain and terrace would continue to be pumped into the pond.</p> <p>Long-Term: Impacts to the liner and eventual failure would be expected as a result of continued or increased infiltration of pond water into the subsurface as a result of the No Action Alternative. Additionally, high uranium concentrations and other environmental constituents would be expected in pond water as a of Alternative 1.</p>	<p>Short-Term: Increases in soil erosion and runoff by exposing unconsolidated materials, clearing vegetation, and compacting soils would be minimized by BMPs.</p> <p>Long-Term: No impact</p> <p>BMPs: Sedimentation and erosion controls (i.e., silt fencing, straw bales) to reduce runoff and soil erosion during construction activities. Redirecting runoff from problem areas, backfilling excavations with clean soil, soil compaction, and other methods to control infiltration of precipitation to groundwater.</p>	<p>Short-Term: Similar to Alternative 2</p> <p>Long-Term: Similar to Alternative 2</p> <p>BMPs: Similar to Alternative 2</p>

Key: APE = area of potential effect; BMPs = best management practices; COC = contaminant of concern; dB = decibel; dBA = "A" weighted decibel; GELP = Gallup Energy Logistics Park; GHG = greenhouse gas; NEPA = National Environmental Protection Agency; PPE = personal protective equipment

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**APPENDIX J:
COMPLIANCE WITH LAWS, REGULATIONS, PERMITS, AND ORDERS**

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The decommissioning and disposal of the 11-acre evaporation pond at the Shiprock disposal site would be regulated by numerous Federal and state legal requirements addressing environmental compliance. For some activities, LM has sole authority to act, such as under the Atomic Energy Act of 1954.

The USDOT regulates commercial transportation of hazardous and radioactive materials. USEPA would regulate many aspects of the proposed activities. In many cases, USEPA has delegated all or part of its environmental protection authorities to the states but retains oversight authority. In this delegated role, the New Mexico Environment Department regulates most air emissions; discharges to surface water and groundwater; drinking water quality; and hazardous and nonhazardous waste treatment, storage, and disposal. Under DOE O 436.1A, *Departmental Sustainability* (2023), it is DOE's policy to carry out its mission in a sustainable manner by maximizing energy and water efficiency; minimizing chemical toxicity and harmful environmental releases; promoting renewable and other clean energy development; and conserving natural resources while sustaining assigned mission activities. The major Federal laws, regulations, Executive Orders (Presidential directives that apply only to Federal agencies), DOE Os; state laws and regulations; and other requirements that could apply to the alternatives analyzed in this EA for decommissioning and disposal of the evaporation pond are identified in Table J-1.

Table J-1. Applicable laws, regulations, and other requirements

Law, Regulation, Order, or Other Requirements	Description
General Requirements	
NEPA of 1969, as amended, 42 USC § 4321 et seq.	Establishes a national policy for environmental protection and directs all Federal agencies to use a systematic, interdisciplinary approach to incorporating environmental values into decision-making
Council on Environmental Quality, Regulations for Implementing NEPA, 40 CFR Parts 1500– 1508	Defines actions that Federal agencies must take to comply with NEPA.
DOE National Environmental Policy Act Implementing Procedures, 10 CFR 1021	Establishes DOE's program implementing the procedural provisions of NEPA.
Executive Order 11514, <i>Protection and Enhancement of Environmental Quality</i> , as amended by Executive Order 11991	Requires Federal agencies to direct their policies, plans, and programs so as to meet national environmental goals established by NEPA.
Executive Order 12088, <i>Federal Compliance with Pollution Control Standards</i>	Directs Federal agencies to comply with applicable administrative and procedural pollution control standards established by, but not limited to, the CAA, Noise Control Act, CWA, Safe Drinking Water Act, Toxic Substances Control Act, and RCRA.
Executive Order 13990, <i>Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis</i>	Among other requirements, directs Federal agencies to ensure access to clean air and water; limit exposure to dangerous chemicals and pesticides; reduce greenhouse gas emissions; bolster resilience to the impacts of climate change; and prioritize both environmental justice and employment.

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DOE Policy 451.1, <i>National Environmental Policy Act Compliance Program</i>	Establishes DOE's expectations for implementing NEPA; the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508); and the DOE NEPA Implementing Procedures (10 CFR Part 1021).
DOE P 450.4A Chg 1 (MinChg), <i>Integrated Safety Management Policy</i>	Establishes the DOE's expectation for safety, including integrated safety management that will enable the Department's mission goals to be accomplished efficiently while ensuring safe operations at all departmental facilities and activities.
DOE O 436.1A, <i>Departmental Sustainability</i>	Establishes an agency-wide integrated, performance-based approach to implement sustainability in DOE operations and ensures the DOE conducts its missions in a sustainable manner that addresses national energy security and global environmental challenges; advances sustainable, efficient, reliable, and resilient energy for the future; promotes the conservation of natural resources; and ensures DOE achieves sustainability goals pursuant to applicable laws, regulations, and Executive Orders.
Environmental Improvement Act, Chapter 74, Article 1 New Mexico Statutes Annotated (NMSA) 1978	The basic authority for environmental management and consumer protection in New Mexico. This law establishes the Environmental Improvement Board and specifies its duties and powers.
Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), as amended, 42 USC 791 et seq. (Public Law 95-604)	Provides for the safe and environmentally sound disposal, long-term stabilization, and control of uranium mill tailings in a manner that minimizes or eliminates health hazards to the public.
Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings 40 CFR 192	Establishes standards for protection of public health, safety, and environment from radiological and non-radiological hazards associated with uranium and thorium ore processing, and their associated wastes.
Atomic Energy Act of 1954, as amended, 42 USC 2011	Provides fundamental jurisdictional authority to DOE and NRC over governmental and commercial use, respectively, of nuclear materials; authorizes DOE to establish standards to protect health or minimize dangers to life or property for activities under DOE jurisdiction; allows DOE to issue a series of orders to establish a system of standards and requirements that ensure safe operation of DOE facilities.
Farmland Protection Policy Act of 1981 7 CFR Part 658	Establishes criteria Federal agencies use (1) to identify and consider the adverse effects of their programs on the preservation of farmland, (2) to consider alternative actions, as appropriate, that could lessen adverse effects, and (3) to ensure that their programs, to the extent practicable, are compatible with State and units of local government and private programs and policies to protect farmland.

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Air Quality	
Clean Air Act of 1970, as amended, 42 USC 7401 et seq.	Requires Federal agencies to comply with air quality regulations; includes four major programs: (1) NAAQS; (2) state implementation plans; (3) new source performance standards; and (4) NESHAP. Allows USEPA to delegate authority for most CAA provisions to New Mexico, who would issue or modify permits, as needed, for stationary sources associated with the proposed activities.
Ambient Air Quality Standards/State Implementation Plans, 40 CFR Parts 51 and 58	Establishes the NAAQS, which are divided into primary and secondary categories for carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and PM.
New Source Performance Standards, 40 CFR Part 60	Creates industry- and process-specific standards applicable to any new, modified, or reconstructed sources of air pollution.
National Emission Standards for Hazardous Air Pollutants (HAPs) and for Source Categories, 40 CFR Parts 61 and 63	Defines HAPs (such as radionuclides, mercury, and asbestos) and maximum achievable control technologies by industry or process. (Proposed activities would add to site HAPs emissions).
Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change, 1/9/23	The CEQ released interim guidance that describes how Federal agencies should consider the effects of GHGs and climate change in their NEPA reviews. The interim guidance explains that agencies should (1) consider the potential effects of project alternatives on climate change, as indicated by its estimated GHG emissions, (2) determine the context of project GHGs, (3) consider mitigations that will reduce project GHGs, (4) consider impacts to Environmental Justice communities, and (5) consider adaptation measures that would make the actions and affected communities more resilient to the effects of climate change.
National Emission Standards for Emissions of Radionuclides other than Radon from DOE Facilities, 40 CFR Part 61, Subpart H	Establishes requirements for monitoring radionuclide emissions from facility operations and analyzing and reporting radionuclide doses; limits, in Subpart H, the radionuclide dose to a member of the public to 10 mrem per year.
Air Quality Control Act, Chapter 74, Article 2 New Mexico Statutes Annotated (NMSA) Air Quality (Statewide): 20.2.1-20.2.350 New Mexico Administrative Code (NMAC)	New Mexico's Environmental Improvement Act and Air Quality Control Act authorize the NMED to regulate air quality and implement air quality control regulations. The New Mexico Air Quality Control Act delegates authority to the Environmental Improvement Board to adopt, promulgate, publish, amend, and repeal regulations consistent with the State's Air Quality Control Act to attain and maintain NAAQS and prevent or abate air pollution. The Air Quality Control Act also designates the NMED as the State's air pollution control agency, and the Environmental Improvement Act provides the NMED with enforcement authority.

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Biological and Natural Resources	
Migratory Bird Treaty Act of 1918, 16 USC 703 et seq. Migratory Bird Permits, 50 CFR Part 21	Implements several international treaties related to the protection of migratory birds and makes it illegal to take, capture, or kill any migratory bird, or to take any part, nest, or egg of any such birds; applies to purposeful actions, not to incidental take.
Endangered Species Act of 1973, 16 USC 1531 et seq. Interagency Cooperation – Endangered Species Act of 1973, as amended, 50 CFR Part 402	Requires Federal agencies to assess whether actions could adversely affect threatened or endangered species or their habitat.
Bald and Golden Eagle Protection Act 16 U.S.C. 668-668d	Prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part (including feathers), nest, or egg thereof."
Executive Order 13186, <i>Responsibilities of Federal Agencies to Protect Migratory Birds</i> (January 10, 2001)	This Executive Order directs executive departments and agencies to take certain actions to further implement the Migratory Bird Treaty Act.
Executive Order 13112, <i>Invasive Species</i> , Amended by E.O. 13286 and E.O. 13751	Directs Federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.
Cultural and Native American Tribal Resources	
American Antiquities Act of 1906, 16 USC 431 et seq Preservation of American Antiquities, 43 CFR Part 3	Protects prehistoric American Indian ruins and artifacts on Federal lands; authorizes the President to designate historic areas as national monuments.
Historic Sites Act of 1935, 16 USC 461 National Historic Landmarks Program, 36 CFR Part 65	Provides for the preservation of historic American sites, buildings, objects, and antiquities of national significance, and serves other purposes.
16 USC 470: National Historic Preservation Act of 1966 36 CFR Part 60: National Register of Historic Places; 36 CFR 61: Procedures for State, Tribal, and Local Government Historic Preservation Programs 36 CFR Part 800: Protection of Historic Properties	Sets forth the procedural requirements for listing properties on the NRHP; identifies the process for evaluating the eligibility of properties for inclusion in the NRHP; establishes the qualifications and defines minimum education and experience required to perform identification, evaluation, registration, and treatment activities related to historic properties; requires consultation with the SHPO and Native American tribes prior to any action that could affect historic resources (this consultation will be accomplished for the proposed activities, as needed).
Archaeological and Historic Preservation Act of 1974, as amended, 16 USC 469 et seq.	Requires the preservation of historical and archaeological data (including relics and specimens) that might otherwise be irreparably lost or destroyed as the result of Federal construction projects.

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American Indian Religious Freedom Act of 1978, 42 USC 1996	Protects and preserves, for Native Americans, their inherent right of freedom to believe, express, and exercise their traditional religions, including access to sites.
Archaeological Resources Protection Act of 1979, 16 USC 470aa-mm Protection of Archaeological Resources, 43 CFR Part 7	Protects archaeological resources and sites on Federal and American Indian lands and establishes the uniform definitions, standards, and procedures to be followed by all Federal land managers in providing protection for archaeological resources located on public lands and American Indian lands of the United States, including collections of prehistoric and historic material remains, and associated records, recovered under the authority of the American Antiquities Act (16 USC 431-433), the Reservoir Salvage Act (16 USC 469–469c), Section 110 of the National Historic Preservation Act (16 USC 470h-2), or the Archaeological Resources Protection Act (16 USC 470aamm).
Executive Order 13175, <i>Consultation and Coordination with Indian Tribal Governments</i>	Requires consultation and coordination with American Indian Tribes prior to taking actions that affect federally recognized tribal governments.
DOE O 144.1 Admin Chg 1, <i>Department of Energy American Indian Tribal Government Interactions and Policy</i>	Establishes a policy committing DOE to consultation with American Indian tribal governments to solicit input on DOE issues.
DOE Policy 141.1, <i>Department of Energy Management of Cultural Resources</i>	Ensures that DOE programs and field elements integrate cultural resources management into their mission and activities.
Navajo Nation Cultural Resources Protection Act (NN Code Title 19, Section 1001 [Chapter 8]) Navajo Nation Cultural Resources Inventory Permit Number B18532	Establishes policies, procedures, and requirements for protecting and managing cultural resources in a manner that reflects the unique preservation concerns of the Navajo Nation. The Navajo Nation Historic Preservation Department is responsible for reviewing applications and issuing permits for all archaeological and ethnographic investigations within the exterior boundaries of the Navajo Nation.
Navajo Nation Policy for the Protection of Jishcháá'	This policy outlines procedures based on Diné cultural beliefs for protecting all gravesites, human remains, and funerary items under jurisdiction of the Navajo Nation.
Native American Graves Protection and Repatriation Act	Provides a process for Federal agencies to repatriate or transfer from their collections certain Native American cultural items—human remains, funerary objects, sacred objects, and objects of cultural patrimony—to lineal descendants, and to Indian tribes, Alaska Native Corporations, and Native Hawaiian organizations. It also provides a process for Federal agencies to address new discoveries of Native American human remains, funerary objects, sacred objects and objects of cultural property intentionally excavated or inadvertently discovered on Federal or Tribal lands.

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<i>Socioeconomics and Environmental Justice</i>	
Executive Order 12898, <i>Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations</i> , as amended by Executive Order 12948	Requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.
Executive Order 13045, <i>Protection of Children from Environmental Health Risks and Safety Risks</i> , as amended by Executive Order 13296	Requires each Federal agency to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and to ensure that its policies, programs, activities, and standards address disproportionate environmental health or safety risks to children.
Executive Order 14008, <i>Tackling the Climate Crisis at Home and Abroad</i>	Requires each Federal agency to develop programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related, and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts.
<i>Human Health and Safety</i>	
Occupational Safety and Health Act of 1970, 29 USC 651 et seq. Occupational Safety and Health Standards, 29 CFR Part 1910, 29 CFR Part 1926.	Ensures worker and workplace safety, including a workplace free from recognized hazards, such as exposure to toxic chemicals, excessive noise levels, and mechanical dangers. Establishes standards to protect workers from hazards encountered in the workplace (Part 1910) and construction site (Part 1926).
Worker Safety and Health Program, 10 CFR Part 851	Creates DOE's health and safety program to control and monitor hazardous materials to ensure that workers are not being exposed to health hazards, such as toxic chemicals, excessive noise, and ergonomic stressors
Occupational Radiation Protection, 10 CFR Part 835	Establishes radiation protection standards, limits, and program requirements for protecting workers from ionizing radiation resulting from DOE activities.
Chemical Accident Prevention Provisions, 40 CFR Part 68	Provides the list of regulated substances and thresholds, and the requirements for owners or operators of stationary sources concerning the prevention of accidental releases, and the state accidental release prevention programs approved under CAA Section 112(r).
DOE O 440.1B Chg 4 (AdminChg), <i>Worker Protection Program for DOE (Including the National Nuclear Security Administration) Federal Employees</i>	Describes the DOE program to protect workers and reduce accidents and losses; adopts occupational safety and health standards.
DOE O 458.1 Chg 4 (LtdChg), <i>Radiation Protection of the Public and the Environment</i>	Establishes requirements to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under the control of DOE, pursuant to the Atomic Energy Act of 1954, as amended.

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National Oil and Hazardous Substances Pollution Contingency Plan 40 CFR 300	The NCP is the Federal Government's blueprint for responding to both oil spills and hazardous substance releases.
40 CFR Part 141: National Primary Drinking Water Regulations	Establishes primary drinking water regulations pursuant to section 1412 of the Public Health Service Act, as amended by the Safe Drinking Water Act (Pub. L. 93–523); and related regulations applicable to public water systems.
40 CFR Part 192, Subpart B: Standards for the Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials from Inactive Uranium Processing Sites.	Establishes requirements that provide reasonable assurance of human health protection as a result of remedial actions.
<i>Solid Waste and Waste Management</i>	
Low-Level Radioactive Waste Policy Act of 1980, 42 USC 2021 et seq. Criteria and Procedures for Emergency Access to Non-Federal and Regional Low-Level Waste Disposal Facilities, 10 CFR Part 62	Specifies that the Federal government is responsible for the disposal of certain LLW, including LLW owned or generated by the DOE; and specifies States are responsible for the disposal of commercially generated LLW; pertains to waste that could be generated by the proposed activities.
Solid Waste Disposal Act of 1965 as amended by RCRA of 1976 and the Hazardous and Solid Waste Amendments of 1984, 42 USC 6901 et seq. RCRA Regulations for Non-hazardous Waste, 40 CFR Parts 239-259 RCRA Regulations for Hazardous Waste, 40 CFR Parts 260-273	Establishes comprehensive management system for hazardous wastes, addressing generation, transportation, storage, treatment, and disposal; allows, per Section 3006 of RCRA (42 USC 6926), States to establish and administer permit programs with USEPA approval; allows USEPA to delegate primary enforcement authority to New Mexico.
Pollution Prevention Act of 1990, 42 USC 13101 et seq. Comprehensive Procurement Guidelines for Products Containing Recovered Materials, 40 CFR Part 247	Establishes requirement to prevent pollution by emphasizing source reduction and recycling. EPA is charged with developing measures for source reduction and evaluating regulations to promote source reduction.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 42 USC 9601	Regulates construction of hazardous waste storage, including for radioactive materials.
DOE Order 435.1, <i>Radioactive Waste Management</i>	Ensures that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety and the environment.
Radiation Protection Act, NMSA 1978, Sections-3-1 to 16	Establishes Radiation Protection Rules and licensing requirements for Radioactive Waste Disposal in New Mexico.
Hazardous Waste Act, NMSA 1978, Section 74-4-1 to -14	Requires proper controls for the management of solid and hazardous waste. Establishes requirements applicable to all hazardous waste management facilities in New Mexico.

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Emergency Management Act, NMSA 1978, Section 74-4B-1 to -14	Establishes procedures for responding to hazardous waste spills and releases and incidents.
Solid Waste Act, NMSA 1978, §74-9-1 to -43	Establishes a comprehensive solid waste management program; plans for and regulates the reduction, storage, collection, transportation, separation, processing, recycling, and disposal of solid waste; and requires issuance of permits for the construction, operation and, if applicable, closure and post closure maintenance of solid waste facilities.
Hazardous Chemicals Information Act, NMSA 1978, Section 74-4E-1 to -9	Ensures that current information on the nature and location of hazardous chemicals is available to local emergency planning committees, emergency responders and the public.
<i>Traffic and Transportation</i>	
Hazardous Materials Transportation Act of 1975, 49 USC 5101 et seq. Transportation, Subchapter C, Hazardous Materials Regulations, 49 CFR Parts 171–180	Provides the USDOT with authority to protect against the risks associated with transportation of hazardous materials, including radioactive materials, in commerce. Establishes USDOT requirements for classification, packaging, hazard communication, incident reporting, handling, and transportation of hazardous materials
Packaging and Transportation of Radioactive Material 10 CFR Part 71	Establishes requirements for persons who transport radioactive material or deliver radioactive material to a carrier for transport. The regulations in 10 CFR Part 71 apply to any licensee authorized by specific or general license to receive, possess, use, or transfer licensed material, if the licensee delivers that material to a carrier for transport, transports the material outside the site of usage, or transports that material on public highways.
Truck Size and Weight, Route Designations—Length, Width, and Weight Limitations 23 CFR 658.17	Governs truck and bus size and weight on the national highway network
Transportation of Hazardous Materials; Driving and Parking Rules 49 CFR Part 397	Establishes regulations regarding the transportation of hazardous materials and includes the attendance and surveillance of motor vehicles, routing, parking, and vehicle safety and maintenance.
DOE O 460.1D Chg1 (LtdChg), <i>Hazardous Materials Packaging and Transportation Safety</i>	Describes DOE safety requirements for the proper packaging and transportation of offsite shipments and onsite transfers of radioactive and other hazardous materials.
DOE O 460.2B, Departmental Materials Transportation Management	Establishes requirements and responsibilities for management of DOE, including NNSA, materials transportation to ensure the safe, secure, and efficient transportation of materials, both hazardous and nonhazardous, for offsite shipments. Supersedes DOE O 460.2A, dated 12-22-2004 and DOE M 460.2-1a, dated 6-4-2008.

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Radioactive and Hazardous Materials Act, NMSA 1978, Section 74-4A-1 to -16	Prescribes the conditions for transport of radioactive material on the highways in New Mexico.
Water Resources	
Clean Water Act, as amended, 33 USC 1251	Establishes a national program to restore and maintain the chemical, physical, and biological integrity of navigable waters by prohibiting the discharge of toxic pollutants in significant amounts without a permit; requires Federal agencies to comply with Federal, state, and local water quality requirements; Section 404 of the CWA regulates development activities in jurisdictional surface waters and wetlands, and delegates USEPA and the USACE to share Section 404 enforcement authority regarding the discharge of dredged or fill material into waters of the United States; allows USEPA to delegate primary enforcement authority for NPDES permits (Section 402) to Idaho. As of 2016, Idaho DEQ received permitting authority to address water pollution by regulating point sources that discharge pollutants to Idaho's surface water.
Safe Drinking Water Act of 1974, as amended, 42 USC 300f et seq.	Establishes a national program to ensure the quality of drinking water in public water systems; allows EPA to delegate primary enforcement authority to New Mexico.
National Primary Drinking Water Regulations, 40 CFR Part 141	Creates standards for maximum contaminant levels for pollutants in drinking water; used as groundwater protection standards.
Procedures for Decision-making (Permitting), 40 CFR Part 124	Contains USEPA procedures for issuing, modifying, revoking, and reissuing, or terminating all RCRA, PSD, and NPDES permits.
New Mexico Water Quality Act, NMSA 1978, Section 74-6-1 to -17	The Act provides authority for water quality management in New Mexico. This law establishes the WQCC and defines its authority to adopt water quality standards and to direct programs consistent with the Federal Clean Water Act.

Key: CAA = Clean Air Act; CFR = Code of Federal Regulations; CWA = Clean Water Act; DEQ = Department of Environmental Quality; GHG = greenhouse gas; LLW = low-level waste; NAAQS = National Ambient Air Quality Standards; NCP = National Oil and Hazardous Substances Pollution Contingency Plan; NESHAP = National Emission Standards for Hazardous Air Pollutants; NMED = New Mexico Environmental Department; NPDES = National Pollutant Discharge Elimination System; NRHP = National Register of Historic Places; NRC = Nuclear Regulatory Commission; DOE O = DOE Order; RCRA = Resource Conservation and Recovery Act; SHPO = State Historic Preservation Officer; USACE = U.S. Army Corps of Engineers; USEPA = Environmental Protection Agency; USC = U.S. Code; WQCC = Water Quality Control Commission

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**APPENDIX K:
LIST OF PREPARERS**

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EA RESPONSIBILITIES: NEPA PROJECT MANAGER

Education: MBA, Business Admin, Florida International University;

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Experience/Technical Specialty: Forty plus years. NEPA implementation and analysis, regulatory compliance, and project management.

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EA RESPONSIBILITIES: NEPA PROJECT MANAGER

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JAY AUSTIN, LEIDOS

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STEPHANIE BURNS, RSI

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Education: MPA, Environmental Management, Indiana University-Purdue University

B.S., Natural Resources and Environmental Science, Purdue University

Experience/Technical Specialty: Twenty-eight years. NEPA implementation and analysis, regulatory compliance, policy analysis.

CHRIS CRABTREE, LEIDOS

EA RESPONSIBILITIES: AIR QUALITY

Education: B.A., Environmental Studies, University of California Santa Barbara

Experience/Technical Specialty: Thirty years. Source emission quantifications, dispersion modeling, health risk assessments, greenhouse gas and climate change analyses, mitigation evaluations, determination of project compliance with air pollution standards and regulations, including NEPA, CEQA, General Conformity Regulations, and regional air pollution agencies.

ERNEST HARR, LEIDOS

EA RESPONSIBILITIES: WASTE MANAGEMENT LEAD

Education: B.S., Zoology, University of Maryland

Experience/Technical Specialty: Forty plus years. NEPA analysis; radiological analyses – normal operation, accidents, and intentionally destructive acts; human health and safety – worker and public; radioactive and mixed waste management; transportation – radiological and nonradiological; remediation; decontamination and decommissioning; and regulatory and compliance analyses.

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CAMERON GARCIA, RSI

EA RESPONSIBILITIES: WASTE MANAGEMENT

Education: MPA, University of Colorado at Denver
B.S., Environmental Restoration and Waste Management, Mesa State College,
Grand Junction, Colorado

Experience/Technical Specialty: Twenty-five plus years. Waste management, site characterization, regulatory compliance, and project management.

ROY KARIMI, LEIDOS

EA RESPONSIBILITIES: HUMAN HEALTH—TRANSPORTATION

Education: Sc.D., Nuclear Engineering, Massachusetts Institute of Technology
N.E., Nuclear Engineering, Massachusetts Institute of Technology
M.S., Nuclear Engineering, Massachusetts Institute of Technology
B.S., Chemical Engineering, Abadan Institute of Technology

Experience/Technical Specialty: Forty years. Nuclear power plant safety, risk and reliability analysis, design analysis, criticality analysis, accident analysis, consequence analysis, spent fuel dry storage safety analysis, transportation risk analysis, and probabilistic risk assessment.

PAMELA MCCARTY, LEIDOS

EA RESPONSIBILITIES: SOCIOECONOMICS

Education: M.S., Industrial and Systems Engineering, University of Florida
M.A., Applied Economics, University of Central Florida
B.S., Business Administration, University of Central Florida

Experience/Technical Specialty: Seventeen years. NEPA socioeconomics analysis.

MELANIE PETERSON, LEIDOS

EA RESPONSIBILITIES: DOCUMENT PRODUCTION

Education: M.A., English, University of Missouri-St. Louis

Experience/Technical Specialty: Thirteen years. Technical editor.

THOMAS L. RUCKER, LEIDOS

EA RESPONSIBILITIES: HUMAN HEALTH—RISK ASSESSMENT LEAD

Education: Ph.D., Chemistry, University of Tennessee at Knoxville
M.S., Chemistry, University of Tennessee at Knoxville
B.S., Chemistry, Lipscomb University

Experience/Technical Specialty: Forty-eight plus. Environmental and Radiological Characterization, Risk and Dose Assessment, and Health Protection.

LINDA SHEADER, RSI

EA RESPONSIBILITIES: Biological and Natural Resources

Education: M.S., Botany/Plant Biology, University of California
B.S., Biology, Adams State University

Experience/Technical Specialty: Thirty-seven. Ecology, Environmental Compliance, Endangered Species Act compliance

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STACY TROWBRIDGE, RSI

EA RESPONSIBILITIES: GROUNDWATER AND GEOLOGY AND SOILS

Education: M.S., Geoscience, University of Tulsa
B.S., Geology, Oklahoma State University

Experience/Technical Specialty: Seven plus. Groundwater evaluation and geologic modeling.

JOE TRNKA, RSI

EA RESPONSIBILITIES: CULTURAL RESOURCES AND VISUAL RESOURCES

Education: BA, Cultural Geography and Russian Studies, University of North Dakota.

Experience/Technical Specialty: Thirty-five years. Cultural resources management and Environmental Justice.

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**APPENDIX L:
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